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# Three *Physico-Theological* DISCOURSES,

CONCERNING

I The Primitive CHAOS, and Creation of the World.

II. The General DELUGE, its Causes and Effects.

III. The Dissolution of the WORLD, and Future Conflagration.

WHEREIN

Are largely Discussed the Production and Use of Mountains; the Original of Fountains, of Formed Stones, and Sea-Fishes Bones and Shells found in the Earth; the Effects of particular Floods and Inundations of the Sea; the Eruptions of *Vulcano's*; the Nature and Causes of Earthquakes:

With an Historical Account of those Two late Remarkable Ones in *Jamaica* and *England*.

With PRACTICAL INFERENCES.

By *JOHN RAY*,
Fellow of the *Royal Society*

The *Second Edition* Corrected, very much Enlarged, and Illustrated with Copper-plates.

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TO THE

Most Reverend FATHER in GOD,

# JOHN,

L^d Arch-Bishop of *Canterbury*,

Primate of all *England*, and *Metropolitan*.

My LORD,

IT *was no Interest or Expectation of mine, that induced me to Dedicate this Discourse to your* Grace. *I am not so well conceited of my own Performances, as to think it merits to be inscribed to so Great a Name, much less that I should Oblige your Lordship, or indeed a far meaner Person by such Inscription. My prin-*

*cipal motive was, that it would give me opportunity of Congratulating with the Sober Part of this Nation, your Advancement to the Archiepiſcopal Dignity; and of acknowledging His Majeſty's Wiſdom in making choice of ſo fit a Perſon to fill that Chair, endued with all Qualifications requiſite for ſo high a Calling; ſo able and skilful a Pilot to govern the Church, and ſo prudent and faithful a Counſellor to ſerve Himſelf. But I will not enlarge in your juſt Praiſes, leſt I ſhould incur the unjuſt Cenſure or Suſpicion of Flattery: Give me leave only to add, what I may without injury of Truth, and I think without violation of Modeſty; that your* Grace*'s Election hath the concurrent Approbation and Applauſe of*

*all*

*all good Men that know you, or have had a true Character of you; which may ſerve to ſtrengthen your Hands in the Management and Adminiſtration of ſo difficult a Province, though you need no ſuch Support, as being ſufficiently involved and armed by your Vertues, and protected by the Almighty Power and Providence. Thoſe that are Good and Wiſe are pleaſed and ſatisfied, when Great Men are preferred to Great Places; and think it pity that Perſons of Large and publick Spirits ſhould be confined to narrow Spheres of Action, and want Field to exerciſe and employ thoſe rich Talents and Abilities wherewith they are endowed, in doing all the Good they are thereby qualified and inclined to do.*

My

# The Epiſtle Dedicatory.

My LORD,

*I am ſenſible that the* Preſent *I make you, is neither for Bulk nor Worth ſuitable to your* Perſon *and* Greatneſs; *yet I hope you will favourably accept it, being the beſt I have to offer; and my Boldneſs may pretend ſome Excuſe from ancient Acquaintance, and from my Forwardneſs to embrace this Opportunity of profeſſing my Name among thoſe that Honour you, and of publiſhing my ſelf,*

My LORD,

Your Grace's moſt devoted Servant,

and humble Orator,

*JOHN RAY.*

# THE PREFACE.

HAving altered the Method of this Treatiſe, and made conſiderable Additions to it, it may juſtly be expected that I ſhould give ſome Account thereof to the Reader. In the Preface to the former Edition, I acquainted him, that I had taken Notice of five Matters of Ancient Tradition. 1. That the World was formed out of a *Chaos*, by the Divine Wiſdom and Power. 2. That there was an univerſal Flood of Waters, in which all Mankind periſhed, excepting ſome few which were ſaved in an Ark or Ship. 3. That the World ſhall one day be deſtroyed by Fire. 4. That there is a Heaven and a Hell, an *Elyſium* and a *Tartarus*, the one to reward good Men, and the other to puniſh wicked, and both eternal. 5. That bloody Sacrifices were to be offered for the Expiation of Sin. And that of four of them I had occaſion to treat in this Book; of two, that is to ſay, of the

the Diſſolution of the World by Fire, and the Eternal State that was to ſucceed (in reference to Man) either in Heaven or Hell, more directly: of the other two, *viz.* The Primitive *Chaos* and Creation, and the General Deluge, occaſionally and by way of digreſſion, at the requeſt of ſome Friends. But now this Treatiſe coming to a ſecond Impreſſion, I thought it more convenient to make theſe ſeveral Diſcourſes upon theſe Particulars, ſubſtantial Parts of my Work, and to diſpoſe them according to the priority and poſteriority of their Subjects, in order of time, beginning with the Primitive *Chaos*.

Concerning theſe Traditions, it may be enquired what the Original of them was, Whether they were of Divine Revelation, or Humane Invention. In anſwer whereto,

As to the Second, That there was once a General Deluge, whereby this whole ſublunary World was drown'd, and all Animals, both Man and Beaſt deſtroyed, excepting only ſuch as were preſerved in an Ark; it being matter of Fact, and ſeen and felt by *Noah*, and his Sons, there can be no doubt of the Original of that.

The Firſt, concerning the *Chaos* and Creation of the World, if it were not ancienter than the Scripture, it is likely it had its Original from the firſt Chapter of *Geneſis*, and the

*Reflecting upon the length of this Diſcourſe concerning the Original of theſe Bodies, I am ſuſpicious that the vulgar and inconſiderate Reader will be ready to demand,* What needs all this ado? To what purpoſe ſo many words about ſo trivial a Subject? What reference hath the conſideration of Shells and Bones of Fiſhes petrified to Divinity? *Wherefore I ſhall in a few words ſhew the great importance of this Diſquiſition concerning formed Stones, and the Determination of their Original.*

*For,* 1ſt, *If we adhere to their Opinion who hold them to have been original Productions of Nature, in imitation only of the Shells and Bones of Fiſhes: We put a Weapon into the Atheiſts hands, affording him a ſtrong Argument to prove that even Animals themſelves are caſual Productions, and not the effects of Counſel or Deſign. For to what end are theſe Bodies curiouſly figured and adorned? if for no other but to exhibit ſuch a Form, for the Ornament of the Univerſe, or to gratifie the Curioſity of Man; theſe are but general ends, whereas the parts of every Species of Body are formed and fitted to the particular Uſes and Conveniences of that Body. And if Nature would delineate or imprint Figures upon Bodies, only to be Spectacles to Man, one would think it ſhould not have made choice of theſe*

*of the Shells and Bones of Fiſhes, but rather of ſuch as were abſolutely new and different from any frequently ſeen or belonging to Animals; which ſerve rather to amuſe than delight him. But 2ly, we find in the Earth not only Stones formed in imitation of Shells; but real Shells, Teeth and Bones of Fiſhes, or Bodies ſo like them, that they are not to be diſtinguiſhed by Figure, Texture, Colour, Weight, or any other Accident. Now what greater Argument can the Atheiſt deſire to prove, that the Shells of Fiſhes were never deſigned by any provident Efficient for their Defence, or their Bones for the ſuſtaining of their Bodies, but that the Fiſh and Shell containing it, and the Bones ſuſtaining it, did caſually concur: than that there ſhould be real Shells produced without any Fiſh in them, and that in dry places where no Fiſh ever did or could breed, or indeed live, and real Fiſh-bones, where there never was nor could be any Fiſh.*

*Doth it not than concern a Divine to be acquainted with this Objection againſt the Bodies of Animals being the effects of Counſel and Deſign, and provided with an anſwer to it. For my part I muſt needs confeſs that this Argument weighs ſo with me, whether from that innate* Prolepſis *my ſelf, and I think moſt other Men have of the Prudence of Nature in all its Operations, or from mine own obſerving that in all other things it acts for ends, that it is alone*

*ſufficient*

*ſufficient to preponderate all the Arguments a-gainſt the contrary Opinions, though I acknowledge them to be of great force and hard to be anſwered, and to incline or rather conſtrain me to allow that theſe Bodies were either real Bones and Shells of Fiſhes, or owe their Figure to them. I cannot (to uſe the Words of* F. Columna) *prevail with my ſelf to believe, that Nature ever made Teeth without a Jaw or Shells without an Animal Inhabitant, or ſingle Bones, no not in their own proper Element, much leſs in a ſtrange one. Who even of the Vulgar beholding any conſiderable part of an Animal which he ſees not the uſe of, is not apt preſently to ask what it ſerves for, as by that innate* Prolepſis *I mentioned before, preſuming it was not made in vain, but for ſome end and uſe. Suppoſe any of us ſhould find in the Earth the compleat* Skeleton *of a Man, he muſt be as credulous as the Atheiſt, if he could believe that it grew there of it ſelf, and never had relation to any Man's Body. Why then ſhould we think that the entire* Skeletons *of Fiſhes found ſometimes in the Earth, had no other Original? nor ever were any part of living Fiſhes.*

2ly, *If we chuſe and embrace the contrary Opinion,* viz. *That theſe Bodies were the real Shells and Bones of Fiſhes, or owe their Figures to them, we ſhall find that this alſo is urged with many and almoſt unſuperable Difficulties, the principal of which I have already produ-*



*ced*

*ced, and ſhall here omit, repeating only two that refer to Divinity.*

1. *Theſe Bodies being found diſperſed all over the Earth, they of the contrary Opinion demand how they come there? If it be anſwered, That they were brought in by the general Deluge; in contradiction thereto, they argue thus. If theſe Stones were found ſcattered ſingly and indifferently all the Earth over, there might be indeed ſome reaſon to imagine that they were brought in by the Floud; but being found in ſome particular places only, either lying thick in great Beds of Sand and Gravel, or amaſſed together in huge Lumps, by a ſtony Cement. ſuch Beds muſt in all likelihood have been the effect of thoſe Animals breeding there for a conſiderable time, whereas the Floud continued upon the Earth but ten Months, during half which time it's not likely that the Mountains were covered; and yet there are found of theſe Bodies upon very high Mountains, not excepting the* Appenine *and* Alps *themſelves. Whence they conclude, that they were neither brought in by the Floud, nor bred during the Floud, but ſome other way produced. For if they were the Shells of Fiſhes, or their Bones, the Water muſt needs have covered the whole Earth, even the Mountains themſelves for a much longer time than is conſiſtent with the Scripture-Hiſtory of the Floud, and therefore we muſt ſeek ſome other original of theſe Bodies.*

*If*

*If we ſtick to the Letter of the Scripture-Hiſtory of the Creation, that the Creation of Fiſhes ſucceeded the Separation of Land and Sea, and that the ſix days wherein the World was created, were ſix natural Days and no more, it is very difficult to return a ſatisfactory Anſwer to this Objection: I ſhall therefore only add a conjecture of my own, and that is, That poſſibly at the firſt Creation, the whole Earth was not all at once uncovered, but only thoſe parts whereabout* Adam *and the other Animals were created, and the reſt gradually afterwards, perchance not in many Years; during which time theſe Shell-fiſh might breed abundantly all the Sea over, the bottom whereof being elevated and made dry Land, the Beds of Shell-fiſh, muſt neceſſarily be raiſed together with it.*

2. *It will hence follow that many* Species *of Animals have been loſt out of the World, which Philoſophers and Divines are unwilling to admit, eſteeming the Deſtruction of any one* Species *a diſmembring of the Univerſe, and rendring the World imperfect. Whereas they think the Divine* Providence *is eſpecially concerned and ſolicitous to ſecure and preſerve the Works of the Creation. And truly ſo it is, as appears, in that it was ſo careful to lodge all Land-Animals in the Ark at the time of the general Deluge, and in that of all Animals recorded in Natural Hiſtories, we cannot ſay that there*

*hath*

*hath been any one Species loſt, no not of the moſt infirm and moſt expoſed to injury and ravine. Moreover it is likely, that as there neither is nor can be any new Species of Animal produced, all proceeding from Seeds at firſt created; ſo Providence without which one individual Sparrow falls not to the Ground, doth in that manner watch over all that are created, that an entire Species ſhall not be loſt or deſtroyed by any Accident. Now I ſay, if theſe Bodies were ſometimes the Shells and Bones of Fiſh, it will thence follow, that many* Species *have been loſt out of the World, as for example, thoſe* Ophiomorphous *ones, whoſe Shells are now called* Cornua Ammonis, *of which there are many Species, none whereof at this day, appear in our or other Seas, ſo far as I have hitherto ſeen, heard or read. To which I have nothing to reply, but that there may be ſome of them remaining ſome where or other in the Seas, though as yet they have not come to my Knowledge. For though they may have periſhed or by ſome Accident been deſtroyed out of our Seas, yet the Race of them may be preſerved and continued ſtill in others. So though Wolves and Bevers, which we are well aſſured were ſometimes native of* England, *have been here utterly deſtroyed and extirpated out of this Iſland, yet there remain plenty of them ſtill in other Countrys.*

*By what hath been ſaid concerning the nature and*

*and original of Stones, I hope it may appear, that this is no idle and unneceſſary Diſcourſe, but very momentous and important ; and this Subject, as mean as it ſeems, worthy the moſt ſerious conſideration of Chriſtian Philoſophers and Divines ; concerning which, though I have ſpent many thoughts, yet can I not fully ſatisfie my ſelf, much leſs then am I likely to ſatisfie others.*

*But I promiſe my ſelf and them more full ſatisfaction ſhortly from the Labours of thoſe who are more converſant and better acquainted with theſe Bodies than I, who have been more induſtrious in ſearching them out, and happy in diſcovering them, who have been more curious and diligent in conſidering and comparing them, more critical and exact in obſerving and noting their nature, texture, figure, parts, places, differences, and other accidents, than my ſelf, and particularly that learned and ingenious Perſon before remembred.*

*The following Tables, containing ſome Species of the moſt different* Genera *of theſe Bodies, viz.* Shark's Teeth, Wolf-fiſh's Teeth, Cockles *or* Concha, Periwinkles *or* Turbens, Cornua Ammonis *or* Serpent ſtones, Sea-urchins *and their* Prickles, Vertebres *and other* Bones of Fiſhes, entire Fiſhes Petrifi'd, *and of thoſe ſome ſingly, ſome repreſented as they lye in Beds and Quarries under Ground, for the information of thoſe who are leſs acquainted with ſuch Bodie, were thought fit to be added to this Edition.*

## TAB. II. *Pag.* 162.

*FIG.* 1, 2. Several Fragments and Lumps of petrify'd Shells, as they lie in Quarries and Beds under ground; on many of these Petrifactions there ſtill remain ſome *Laminæ*, or Plates of the Original Shells, which prove them not to be Stones primarily ſo figur'd.

*Fig* 3. The *Cornu Ammonis* lying in Rocks with other petrify'd Bodies.

## TAB. III. *Pag.* 162.

*FIG.* 1, 2. Two petrify'd Fiſhes lying in Stone, with their Scales and Bones.

*Fig.* 3. A Sea-Urchin petrify'd with its Prickles broken off, which are a ſort of *Lapis Judaicus*, or *Jew-Stones*; their Inſertions on the Studs or Protuberances of the Shell are here ſhewn. See their Hiſtory and Manner of Lying in Stone and Beds, in *Agoſtino Scilla*. 4°. *Napoli*.

## TAB. IV. *Pag.* 162.

*FIG.* 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14. Several petrify'd Teeth of Dog-Fiſhes, Sharks, and other Fiſhes.

*Fig.* 15, 16. The ſame lying in a Tophaceous Bed, and alſo in a Jaw-Bone.

*Fig.* 17. The petrify'd Teeth of a Wolf-Fiſh, in a piece of the Jaw; the Round Ones, or Grinders, are ſold in *Maltha* for petrify'd Eyes of Serpents; and by our Jewellers and Goldſmiths for Toad-ſtones, commonly put in Rings.

*Fig.* 18, 19, 20. Other petrify'd Bones of Fiſhes, eſpecially Joynts, or Vertebra's of Back-bones, one with two ſtony Spines, iſſuing out, *f.* 20. See them more at large in the Draughts of that curious *Sicilian* Painter, *Agoſtino Scilla*.

*Place this before* Tab. II. *p.* 162.

the *Chaos* from the ſecond Verſe, *And the earth was without form and void, and darkneſs was upon the face of the deep.* But if it were more ancient, it muſt ſtill in all likelihood be Divinely revealed, becauſe Man being created laſt, and brought into a World already filled and furniſhed: And God being an Omnipotent, and alſo a Free Agent, who could as well have created the World in a moment, or altogether, as ſucceſſively, it was impoſſible for Man by reaſon to determine, which way he made choice of.

The Third, Concerning the future Diſſolution and Deſtruction of the World by a General *Conflagration*, there being nothing in Nature that can demonſtrate the neceſſity of it: and a ſecond Inundation and Submerſion by Water, being in the Courſe of Nature an hundred times more probable, as I have ſhewn in the enſuing Diſcourſes: And therefore we ſee God Almighty to ſecure Man againſt the apprehenſion and dread of a ſecond Deluge, made a Covenant with him, to give him a viſible Sign in confirmation of it, never to deſtroy the World ſo again: And the Ancients who relate this Tradition, delivering it as an Oracle or Decree of Fate. *Ovid Metamorph.* 1. *Eſſe quoque in fatis reminiſcitur affore tempus*, &c. was likewiſe probable of Divine Revelation.

The Fourth, That there ſhall be a Future State, wherein Men ſhall be puniſhed or rewarded, accordingly as they have done ill or well in this Life, and that State Eternal: thô the firſt part may be demonſtrated from the Juſtice and Goodneſs of God, becauſe there being an unequal diſtribution of Good and Evil in this Life, there muſt be a time to ſet things ſtreight in another World; yet it being ſo difficult to Human Reaſon, to reconcile the Eternity of Puniſhments, with the Juſtice and Goodneſs of God, this ſecond part of the Tradition had need be well back'd by Divine Authority to make it credible and current among Men.

As for the Laſt, tho' I meddle not with it in this Treatiſe, yet I will take leave to ſay ſo much concerning it, That I think thoſe who held Sacrificing to have been a poſitive Command of God, and to have had its Original from Divine Inſtitution, have the better reaſon on their ſide. For that it is no eternal and indiſpenſable Law of Nature, is clear, in that our Saviour aboliſhed it. And many of the Ancient Fathers look upon Sacrificing as ſo unreaſonable a Service, that therefore they thought God commanded it not to the Primitive Patriarchs; and though he did command it to the *Jews*, yet he did it only in condeſcenſion to their weakneſs, becauſe they had been

been uſed to ſuch Services, and alſo the Nations round about them, to reſtrain them from Idolatry, and Sacrificing to ſtrange Gods, *Origen. Homil.* 17, *in Numer. Deus ſicut per alium Prophetam dicit non mandiſcat carnes taurorum, nec ſanguinem hircorum potat. Et etiam, ut alibi ſcriptum eſt, Quia non mundavi tibi de Sacrificiis vel victimis in die qua deduxi te de terra Ægypti. Sed* Moyſes *hæc ad diuritiem cordis eorum, pro conſuetudine peſſima qua imbuti fuerant in Ægypto, mandavit eis, ut qui abſtinere ſe non poſſent ab immolando, Deo ſaltem & non Dæmoniis immolarent.* Other Quotations to this purpoſe may be ſeen in Dr *Outram De Sacrificiis*. Indeed it ſeems abſurd to think or believe, that God ſhould take any pleaſure in the ſlaughter of innocent Beaſts, or in the Fume and *Nidor* of burnt Fleſh or Fat: Nor doth the reaſon theſe Fathers alledge of the Inſtitution of Sacrifices or injoyning them to the *Jews* ſatisfie, whatever truth there may be in it: For it is clear, that the main end and deſign of God in inſtituting of them, was for Types and Adumbrations of that great Sacrifice of Chriſt to be offered upon the Croſs for the expiation of ſin: and conſequently it is probable, that thoſe alſo that were offered by the Ancient Patriarchs before the Law, had their Original from ſome Divine Command or Revelation, and the like

reaſon of their Inſtitution, in reference to Chriſt.

But to leave that, I have in this Edition removed one ſubject of Apology, and added another, ſo that there ſtill remain as many things to be excuſed or pleaded for. They are,

Firſt, *Writing ſo much*; for which ſome perchance may cenſure me, I am not ignorant, that Men as they are mutable, ſo they love change, and affect variety of Authors as well as Books. Satiety even of the beſt things is apt to creep upon us. He that writes much, let him write never ſo well, ſhall experience, that his laſt Books, though nothing inferiour to his firſt, will not find equal acceptance. But for mine own part, tho' in general I may be thought to have written too much, yet is it but little that I have written relating to Divinity. It were a good Rule to be obſerved both by Writer and Reader, *Not how much, but how well* He that cannot write well, had better ſpare his Pains, and not write at all. Neither is he to be thought to write well, who though he hath ſome good things thin ſet and diſperſed, yet encumbers and accloys the Reader with a deal of uſeleſs and impertinent ſtuff. On the contrary, he that writes well, cannot write too much. For as *Pliny* the younger ſaith well, *Ut aliæ bonæ res, ita bonus Liber eò melior eſt quiſq; quo major: As other*

*other good Things, ſo a good Book, the bigger it is, the better is it:* which holds as well of the Number as Magnitude of Books.

Secondly, *Being too haſty in huddling up, and tumbling out of Books:* wherein, I confeſs, I cannot wholly acquit my ſelf of blame. I know well, that the longer a Book lies by me, the perfecter it becomes. Something occurs every day in Reading or Thinking, either to add, or to correct and alter for the better. But ſhould I defer the Edition till the Work were abſolutely perfect, I might wait all my Life-time, and leave it to be publiſhed by my Executors. Now my Age minding me of the approach of Death; and Poſthumous Pieces generally proving inferiour to thoſe put out by the Authors in their Life-time, I need no other excuſe for my haſt in publiſhing what I write. Yet I ſhall further add in extenuation of the fault, if it be one, that however haſty and precipitate I am in writing, my Books are but ſmall, ſo that if they be worthleſs, the Purchaſe is not great, nor the Expence of Time waſted in the peruſal of them very conſiderable. Yet is not the worth of a Book always anſwerable to its bulk. But on the contrary, Μέγα βιβλίον, is uſually eſteemed, ἴσον τῷ μεγάλῳ κακῷ; for οὐκ ἐν τῷ μεγάλῳ τὸ εὖ ἀλλ' ἐν τῷ ὀλίγῳ τὸ μέγα.

*Thirdly*, The laſt thing for which I had need to Apologize, is the rendring the former Edition of this Treatiſe worthleſs by making large Additions to this latter: in excuſe whereof I have no more to ſay than I have already written in an Advertiſement to the Reader, premiſed to my Diſcourſe concerning the Wiſdom of God, to which therefore I refer thoſe who deſire ſatisfaction in this particular.

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DIS-

# DISCOURSE I.

## *Of the Primitive* CHAOS *and Creation of the World.*

IN the former Edition of this Treatiſe this Diſcourſe concerning the *Primitive Chaos* and Creation of the World, and that other concerning the Deſtruction thereof by the Waters of the *General Deluge*, in the days of *Noah*, were brought in by way of Digreſſion; becauſe I deſigned not at firſt to treat of them, but only of the *Conflagration* or *Diſſolution* of the *World* by *Fire*; but was afterwards, when I had made a conſiderable progreſs in the *Diſſolution*, at the inſtance of ſome Friends, becauſe of their Relation to my Subject, prevailed upon to ſay ſomething of them. But now that I am at liberty ſo to do, I ſhall not handle them any more by the by, but make them ſubſtantial Parts of my Book,

and diſpoſe them, as is moſt natural, according to their priority and poſteriority in order of time, beginning with the *Chaos* and *Creation.*

## CHAP. I.

### *Teſtimonies of the Ancient Heathen Writers concerning the* Chaos, *and what they meant by it.*

IT was an ancient Tradition among the Heathen, that the World was created out of a *Chaos.*

Firſt of all the ancient Greek Poet *Heſiod*, who may contend for Antiquity with *Homer* himſelf, makes mention of it in his *Theogenia*, not far from the beginning, in theſe words.

Ητοι μὲν πρώτιστα Χάος γένετ'.

*Firſt of all there was a Chaos.* And a few Verſes after, ſpeaking of the immediate Production or Off-ſpring of the Chaos, he ſaith,

Ἐκ Χάεος δ' Ἔρεβός τε, μέλαινά τε Νὺξ ἐγένοντο.

*From*

*From* Chaos *proceeded* Hell, and Night [or Darkneſs] which ſeems to have its foundation or occaſion from the ſecond Verſe of the firſt Chapter of *Geneſis*; *And the Earth was without form and void*; *and darkneß was upon the face of the deep.* Of this teſtimony of *Heſiod*, *Lactantius* takes notice, and cenſures it, in the firſt Book of his *Inſtitutions* cap. 5. *Heſiodus non à Deo conditore, ſumens exordium, ſed à Chao, quod eſt rudis inordinatáque materiæ confuſæ congeries.* *Heſiod* not taking his beginning from God the Creator of all things, but from the *Chaos*, which is a rude and inordinate heap of confuſed matter. And ſo *Ovid* deſcribes it in the beginning of his *Metamorphoſis*;

*Quem dixere* Chaos, *rudis indigeſtáque moles,*
*Nec quicquam niſi pondus iners congeſtáque eôdem*
*Non bene junctarum diſcordia ſemina rerum.*

That is,

*One face had Nature, which they* Chaos *nam'd*
*An undigeſted lump, a barren load,*
*Where jarring Seeds of things ill joyn'd abood.*

Others of the Ancients have alſo made mention of the *Chaos*, as *Ariſtophanes* in *Avibus*.

Χάος ἰῶ γὴ Νὺξ, Ἔρεβός τε μέλαν πρῶτον, &c.

And *Lucan* in the beginning of his firſt Book

*Antiquum repetent iterum Chaos omnia*, &c.

Of the formation of all the Parts of the World out of this *Chaos*, *Ovid* in the place fore-quoted, gives us a full and particular deſcription: and *Euripides* before him a brief one,

Ὁ δ' Οὐρανὸς γῆ γαῖά, τ' ἰῶ μορφὴ μία,
Ἐπεὶ δ' ἐχωρίσθησαν ἀλλήλων, &c.

*The Heaven and Earth were at firſt of one form; but after they were ſeparated, the Earth brought forth Trees, Birds, Beaſts, Fiſhes and Mankind.*

The like account alſo the ancient Philoſopher *Anaxagoras* gives of the Creation of the World, beginning his Philoſophy thus, Πάντα χρήματα ἰῶ ὁμοῦ εἶτα Νοῦς ἐλθὼν αὐτὰ διεκόσμησε: that is, *All things* (at firſt) *were together*, or mingled and confuſed, *then Mind ſupervening diſpoſed them in a beautiful order.*

That which I chiefly diſlike in this Opinion

nion of theirs is, that they make no mention of the Creation of this *Chaos*, but ſeem to look upon it as ſelf-exiſtent and improduced.

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## CHAP. II.

### *That the Creation of the World out of a* Chaos *is not repugnant to the Holy Scripture.*

THis Opinion of a *Chaos*, if ſoberly underſtood, not as ſelf-exiſtent and improduced, but in the firſt place created by God, and preceding other Beings, which were made out of it, is not, ſo far as I can diſcern, any way repugnant to the Holy Scripture, but on the contrary rather conſonant and agreeable thereto. For *Moſes* in the Hiſtory and Deſcription of the Creation in the firſt Chapter of *Geneſis*, ſaith not that God created all things in an inſtant in their full ſtate and perfection, but that he proceeded gradually and in order, from more imperfect to more perfect Beings, firſt beginning with the Earth, that is, the Terraqueous Globe, which was made *tohu vabohu*, without form and void, the Waters cover-

ing the face of the Land, which were afterwards ſeparated from the Land, and gathered together into one place. Then he created out of the Land and Water firſt Plants, and then Animals, Fiſhes, Birds, Beaſts, in Order, and laſt of all formed the Body of Man of the Duſt of the Earth.

And whereas there is no particular mention made of the Creation of Metals, Minerals and other Foſſils, they muſt be comprehended in the word *Earth*, as the Water it ſelf alſo is in the ſecond Verſe of this firſt Chapter.

It ſeems therefore to me conſonant to the Scripture, That God Almighty did at firſt create the Earth or Terraqueous Globe, containing in its ſelf the Principles of all ſimple inanimate Bodies, or the minute and naturally indiviſible Particles of which they were compounded, of various but a determinate number of Figures, and perchance of different magnitudes; and theſe variouſly and confuſedly commixed, as though they had been careleſly ſhaken and ſhuffled together; yet not ſo, but that there was order obſerved by the moſt Wiſe Creator in the diſpoſition of them. And not only ſo, but that the ſame Omnipotent Deity did create alſo the Seeds or Seminal Principles of all Animate Bodies, both Vegetative and Senſitive; and diſperſt

diſperſt them, at leaſt the Vegetative, all over the ſuperficial part of the Earth and Water. And the Notion of ſuch an Earth as this is, the Primitive Patriarchs of the World delivered to their Poſterity, who, by degrees annexing ſomething of fabulous to it, impoſed upon it the name of *Chaos*.

The next work of the Divine Power and Wiſdom was the ſeparation of the Water from the dry Land, and raiſing up of the Mountains, of which I ſhall treat more particularly in the next Chapter.

To which follows the giving to both Elements a power of hatching, as I may ſo ſay, or quickening and bringing to perfection the Seeds they contained; firſt the more imperfect, as Herbs and Trees; then the more perfect, Fiſh, Fowl, Four-footed Beaſts, and creeping Things or Inſects. Which may be the meaning of thoſe Commands of God, which were operative and effectual, communicating to the Earth and Water a power to produce what he commanded them, *Gen.* 1. 11. *Let the Earth bring forth Graſs*, &c. and *v.* 20. *Let the waters bring forth abundantly the moving creature that hath life, and fowl that may fly above the Earth*, &c. And v. 24. *Let the Earth bring forth the living creature after his kind, cattel and creeping thing, and beaſt of the Earth after his kind.*

So the Earth was at first cloathed with all sorts of Herbs and Trees; and both Earth and Water furnished with Inhabitants. And this the Ancients understood by their διακόσμησις.

But whether out of præ-existing Seeds, as I suppose, or not, certain it is that God at that time did give an extraordinary and miraculous power to the Land and Water of producing Vegetables and Animals: and after there were as many of every kind brought forth as there were Seeds created at first; or as many as it seemed good to the Divine Creator to produce without Seed; there remained no further ability in those Elements to bring forth any more; but all the succeeding owe their original to Seed; God having given to every *Species* a power to generate or propagate its like.

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## CHAP. III.

### *Of the separating the Land and Water, and raising up the Mountains.*

SUpposing that God Almighty did at first create the Terrestrial Globe, partly of solid and more ponderous, partly of fluid and lighter

lighter parts; the ſolid and ponderous muſt needs naturally ſubſide, the fluid and lighter get above. Now that there were ſuch different parts created, is clear, and therefore it is reaſonable to think that the Waters at firſt ſhould ſtand above and cover the Earth: and that they did ſo, ſeems evident to me from the teſtimony of the Scripture. For in the Hiſtory of the Creation in the firſt Chapter of *Geneſis*, verſe 2. it is ſaid, That *the Spirit of God moved upon the face of the waters*, intimating that the Waters were uppermoſt. *And God ſaid*, verſe 9. *let the waters under the Heaven be gathered together into one place, and let the dry land appear.* Whence, I think, it is manifeſt to any unprejudiced Reader, That before that time the Land was covered with water. Eſpecially if we add the teſtimony of the holy *Pſalmiſt*, *Pſalm* 104. verſ. 6. & 9. which is as it were a comment upon this place of *Geneſis*, where ſpeaking of the Earth at the Creation, he ſaith, *Thou coveredſt it with the deep as with a garment; the waters ſtood above the Mountains* . . . . and ver. 9. *That they turn not again to cover the Earth.* And that this gathering together of waters was not into any ſubterraneous Abyſs, ſeems likewiſe clear from the Text. For it is ſaid, That God called this Collection of waters *Seas*, as if it had

been on purpoſe to prevent ſuch a miſtake.

Whether this ſeparation of the Land and Water, and gathering the waters together into one place, were done by the immediate application and agency of God's Almighty Power, or by the intervention and inſtrumentality of ſecond Cauſes, I cannot determine. It might poſſibly be effected by the ſame Cauſes that Earthquakes are, *viz.* ſubterraneous Fires and *Flatuſes*. We ſee what incredible effects the Accenſion of Gunpowder hath: it rends Rocks, and blows up the moſt ponderous and ſolid Walls, Towers and Edifices, ſo that its force is almoſt irreſiſtible. Why then might not ſuch a proportionable quantity of ſuch Materials ſet on fire together raiſe up the Mountains themſelves, how great and ponderous ſoever they be, yea the whole Superficies of the dry Land (for it muſt all be elevated) above the Waters? And truly to me the Pſalmiſt ſeems to intimate this Cauſe, *Pſalm* 104. 7. For after he had ſaid, *The waters ſtood above the mountains*; he adds, *At thy rebuke they fled, at the voice of thy thunder they haſted away.* Now we know that an Earthquake is but a ſubterraneous Thunder, and then immediately follows, *The mountains aſcend, the valleys deſcend*, &c. If there might be a high Hill raiſed up near the City *Trœzen*, out of a

a plain Field, by the force of a ſubterraneous Fire or *Flatus*, as Ovid tells us.

*Eſt prope Pitthæam tumulus Trœzena ſine ullis*
*Arduus arboribus, quondam planiſſima campi*
*Area, nunc tumulus: nam (res horrenda relatu)*
*Vis fera ventorum, cæcis incluſa cavernis,*
*Expirare aliqua cupiens, luctatáque fruſtra*
*Liberiore frui cœlo, cum carcere rima*
*Nulla fuit toto, nec pervia flatibus eſſet,*
*Extentam tumefecit humum, ceu ſpiritus oris*
*Tendere veſicam ſolet, aut derepta bicornis*
*Terga capri; tumor ille loci permanſit & alti*
*Collis habet ſpeciem, longóque induruit ævo.*

Ovid Metamorph. lib. 15

*A Hill by* Pitthæan Trœzen *mounts uncrown'd*
*With Sylvan Shades, which once was level ground,*
*For furious Winds (a ſtory to admire)*
*Pent in blind Caverns, ſtrugling to expire;*
*And vainly ſeeking to enjoy th' Extent*
*Of freer Air, the Priſon wanting vent,*
*Puffs up the hollow Earth extended ſo,*
*As when with ſwelling Breath we Bladders blow.*
*The tumour of the place remained ſtill.*
*In time grown ſolid, like a lofty Hill.*

A parallel Inſtance hereto we have of later date, of a Hill not far from *Puzzuolo* [*Puteoli*] be-

beſide the Gulph of *Baiæ*, which I my ſelf have view'd and been upon. It is by the Natives called *Monte di cenere*, and was raiſed by an Earthquake *Sept.* 29. 1538. of about one hundred foot perpendicular altitude; though ſome make it much higher: according to *Stephanus Pighius* it is a Mile aſcent to the top, and four Miles round at the foot: We indeed judged it not near ſo great. The People ſay it bears nothing; nothing of any uſe or profit I ſuppoſe they mean: elſe I am ſure there grows *Heath*, *Myrtle*, *Maſtick-tree*, and other Shrubs upon it. It is a ſpungy kind of Earth, and makes a great ſound under a Man's feet that ſtamps upon it. The ſame Earthquake threw up ſo much Earth, Stones and Aſhes as quite filled up the *lacus Lucrinus*, ſo that there is nothing left of it now, but a fenny Meadow. If ſuch Hills, I ſay, as theſe may be, and have been elevated by ſubterraneous Wild-fire, *Flatus* or Earthquakes, *Si parvis liceat componere magna*, if we may compare great things with ſmall, why might not the greateſt and higheſt Mountains in the World be raiſed up in like manner by a ſubterraneous *Flatus* or Wild-fire, of quantity and force ſufficient to work ſuch an effect, that is, that bears as great a proportion to the ſuperincumbent weight and bulk to be elevated, as thoſe under

under theſe ſmaller Hills did to theirs?

But we cannot doubt this may be done, when we are well aſſured that the like hath been done. For the greateſt and higheſt Ridge of Mountains in the World, the *Andes* of *Peru*, have been for ſome hundreds of Leagues in length violently ſhaken, and many alterations made therein by an Earthquake that happened in the year 1646. mentioned by *Kircher* in his *Arca Noæ*, from the Letters of the Jeſuits. And *Pliny* tells us of his own knowledge, that the Alps and Appennine have often been ſhaken with Earthquakes: *Exploratum eſt mihi Alpes Apenninúmque ſæpius tremuiſſe*, lib. 2. cap 80. Nay more then all this, we read that in the time of the Emperour *Valentinian* the firſt, there was an Earthquake that ſhook all the known World. Whilſt this Innovator, [that is *Procopius*] was yet alive (ſaith *Amm. Marcellinus* lib. 26. cap. 14.) *Horrendi tremores per omnem orbis ambitum graſſati ſunt ſubitò, quales nec fabulæ, nec veridicæ nobis antiquitates exponunt. Paulò enim poſt lucis exortum denſitate prævia fulgurum acriùs vibratorum tremefacta concutitur omnis terreni ſtabilitas ponderis, maréque diſpulſum retrò fluctibus evolutis abſceſſit, ut retecta voragine profundodorum ſpecies natantium multiformes limo cernerentur hærentes, valliúmque vaſtitates &*

*mon-*

*montium, ut opinari dabatur, ſuſpicerent radios ſolis quos primigenia rerum ſub immenſis gurgitibus amandavit*, &c. that is, Horrid Earthquakes ſuddenly raged all the World over, the like whereto neither Fables nor true Antiquities ever acquaint us with, or make mention of. For ſoon after break of day redoubled ſmart and violent flaſhes of Lightning preceding, the ſtable and ponderous maſs of the whole Earth was ſhaken and made to tremble; and the Sea with revolved waves was driven backwards, and forced ſo far to recede, that the bottom of the great Deeps and Gulfs being diſcovered, multiform Species of Fiſhes forſaken by the water were ſeen lying on the Mud: and thoſe vaſt Valleys and Mountains which the primigenial Nature had ſunk deep and concealed under immenſe waters (as we had reaſon to think) ſaw the Sun beams. Wherefore many Ships reſting upon the dry ground, the Mariners wandring careleſly up and down through the ſmall reliques of the waters, that they might gather up Fiſhes and other things with their hands; The Sea-waves, being as it were grieved with their repulſe, riſe up again, and making their way backward through the fervid Shallows, violently daſhing againſt the Iſlands and extended Shores of the Continents, threw down and levelled in-

numerable Edifices in Cities and where elſe they were found. Where ſee more of the effects of it. Of this Earthquake we find mention alſo in *Zoſimus* and *Oroſius*.

If this ſtory be true, as certainly it is, we have no reaſon to doubt of the poſſibility of the Dry land being thus raiſed at firſt by ſubterraneous Fire. And with us agrees the learned *Thomas Lydyat* in his *Philoſophical Diſquiſition concerning the origine of Fountains*, &c. being of opinion not only that it might be ſo, but that it was ſo. I ſhall give you his own words, *Ubi aliud quoque ſummæ admirationis plenum Terræ motûs atque Ignis ſubterranei effectum notandum venit, montium ſci. generatio.* And then having mentioned the raiſing up Iſlands in the Sea by ſubterraneous Fires, he proceeds thus, *Quomodo etiam omnes montes qui uſpiam ſunt, unà cum ipſis terris Continentibus (quæ nihil aliud ſunt quàm ſparſi in Oceano majores montes ſive inſulæ) in mundi primordiis, (quando nimirum ignis quo de loquimur, in terræ viſceribus à potentiſſimo mundi Conditore accenſus eſt) extitiſſe maximè ſit veriſimile, mari in cava loca recedente, & terreſtribus Animalibus (ejuſdem Divini numinis ſapientiſſimo conſilio) habitandi locum relinquente.* That is, *After which manner alſo all the Mountains in the World, together with the*

*the Continents themselves, (which are nothing else but great Mountains or Islands scattered in the Ocean) in the beginning of the World, when the fire of which we speak was first kindled in the bowels of the Earth by the Almighty Creator, were (as it is most highly probable) originally raised up: the Sea receding into the cavities and depressed places, and by the most wise counsel of the supreme Deity leaving room for terrestrial Animals to inhabit.* Then which nothing can be said more consonant to what we have written: And I was highly pleased and satisfied to find such Philosophy in so learned and judicious a Writer.

And in confirmation of this Doctrine, *Strabo* himself, though he had not, nor could have any knowledge at all of the prodigious effects of Gunpowder, yet makes no difficulty to affirm the possibility of raising up as well the Continents and Mountains as the Islands by Earthquakes and subterraneous Fires; toward the latter end of the first Book of his Geography discoursing thus: Καὶ γὰρ σεισμοὶ, καὶ ἀναφυσήματα, καὶ ἀποιδήσεις τῆς ὑφάλου γῆς μετεωρίζουσι, καὶ τὴν θάλασσαν. Οὐ γὰρ μύδροι μὲν ἀνενεχθῆναι δύνανται, καὶ μικραὶ νῆσοι, μεγάλαι δ' οὔ· οὐδὲ νῆσοι μὲν, ἤπειροι δ' οὔ. And a little after, Καὶ τὴν Σικελίαν οὐδέν τι μᾶλλον ἀπορρῶγα τῆς Ἰταλίας εἰκάζοι

τὶς

τὶς, ἂν, ἢ ἀναβληθεῖσαν ὑπὸ τοῦ Αἰτναίου πυρὸς ἐκ βύθου συμμεῖναι. That is, *For Earthquakes and Eruptions of* Flatus [*Blasts*] *or sudden tumors of the submarine Earth, or bottom of the Sea, may swell and elevate the Sea; so that not only small lumps or masses of matter, but even Islands may be raised up in the midst of it. Neither if small Islands can be raised, may not great ones too; neither may Islands be heaved up, and not Continents as well. And* Sicily *may as well be thought to have been thrown up out of the Deep by the force of the* Ætnæan *fire, and sticking together to have continued above water, as to have been a piece broken off from* Italy. And the like may be said of the Islands of *Lipara* and *Pithecusæ*.

Of the possibility of doing it we need not doubt, when we have sufficient proof of the thing done in lesser Islands thus heaved up in the midst of the Sea, by submarine fires. *Strabo* lib. 1. Ἀνὰ μέσον γὰρ Θήρας καὶ Θηρασίας ἐκπεσοῦσαι φλόγες ἐκ τοῦ πελάγους ἐφ' ἡμέρας τέσσαρας, ὥστε πᾶσαν ζεῖν καὶ φλέγεσθαι τὴν θάλασσαν, ἀνεφύσησαν κατ' ὀλίγον ἐξαιρομένην ὡς ἂν ὀργανικῶς καὶ συντεθειμένην ἐκ μύδρων νῆσον, δώδεκα σταδίων τὴν περίμετρον. That is, *Between* Thera *and* Therasia *flames issuing out of the Sea for four days, (so that the whole Sea boil'd and burned) blew up by little and little, as if it had been raised by Machines,*

*and compoſed of great lumps or maſſes, an Iſland of twelve furlongs circumference.*

And *Pliny* tells us, that the Iſland *Hiera* near *Italy*, in the time of the Social War, together with the Sea it ſelf, did burn for ſeveral days. His words are, *In medio Mari* Hiera *inſula juxta* Italiam *cum ipſo Mari arſit per aliquot dies.*

And *Strabo* lib. 1. reports, That about *Methone* in the Bay of *Hermione*, there was Earth raiſed, and as it were blown up to the height of ſeven Furlongs by a fiery breath or exhalation, which by day time was unacceſſible by reaſon of heat and ſulphureous ſtench, but ſmelling ſweet by night, and ſhining ſo as to be ſeen afar off, likewiſe caſting ſuch a heat, as to cauſe the Sea to boil for five Furlongs, and to render it troubled for the ſpace of twenty; raiſing up therein a Baich or Bank of Stones as big as Towers.

Theſe Inſtances I alledge principally becauſe they ſeem to demonſtrate a poſſibility of the accenſion of fire in the Earth when it was wholly covered with Water, and had no entercourſe or communion with the ſuperiour or external Air: which is the main and moſt material Objection againſt the elevation of the dry Land at the beginning by ſubterraneous fires.

You

You will ſay, If the Mountains be thus heaved up by ſubterraneous fires, the Earth muſt needs be hollow all underneath them, and there muſt be vaſt Dens and Caverns diſperſt throughout them.

I anſwer, 'Tis true indeed, ſo there are; as may undeniably be proved by inſtances. For the new Mountain we mentioned at *Puteoli*, that was thus raiſed, being of a Mile ſteep aſcent, and four Miles round at the foot, a proportionable Cavity muſt be left in the Earth underneath: And the Mountain *Ætna* at the laſt Eructation alone having diſgorged out of its bowels ſo great a flood of melted Materials, as if ſpread at the depth and breadth of three foot, might reach four times round the whole Circuit of the *Terraqueous Globe*, there muſt likewiſe an anſwerable Vault be left within. You will demand, How then comes it to paſs, that they ſtand ſo firm, and do not founder and fall in after ſo many Ages. I anſwer, that they may ſtand, appears by the foreſaid new-raiſed Mountain. For notwithſtanding the Cavity in and under it, it hath ſtood firm and ſtaunch, without the leaſt ſinking or ſubſidency, for above an hundred and fifty years: neither is there any great ſinking or falling in at *Ætna* it ſelf; at leaſt in no degree anſwerable to its ejected matter. This aſſer-

tion is confirmed by the unanimous vote and teſtimony of all Writers, Ancient and Modern, who have handled this Subject. But *Alphonſus Borellus* ſuppoſes them not to have duly conſidered the matter, and calculated the quantity of the ejected materials and the bulk of the Mountain, and compared them together; but to have been carried away by the prejudices and perſwaſions of the People, who looking upon the top of the Mountain at a diſtance, think it but a ſmall thing in compariſon of the ejected Sand and Aſhes that covered whole Countries; and thoſe vaſt Rivers of liquid ſtones and other ingredients, that ran down ſo many miles, whereas he by a moderate computation found out that the total of what the Mountain diſgorged at the laſt eruption amounted not (as I remember) to the fourteen thouſandth part of the Solidity of the whole Mountain. The reaſon is the ſtrength and firmneſs of their Vaulture and Pillars, ſufficient to ſupport the ſuperincumbent weight. And yet in ſome places there are ſinkings and fallings in, which have afterwards become Valleys or Pools of Water. But as for the Cavities that are lower than the *Superficies* of the Ocean, the Water, where it could inſinuate and make its way, hath filled them up to that height. I ſay where it could make its way,

way, for that there are many empty Cavities even under the Sea it ſelf, appears by the ſhaking and heating too of the very Water of the Sea in ſome places in Earthquakes, and raiſing up the borders or skirts of it, ſo as to drive the Water a great way back; and the raiſing up new Iſlands in the middle of the Sea; as *Delos* and *Rhodes*, and *Anaphe*, and *Nea*, and *Alone*, and *Hiera*, and *Thera* mentioned by *Pliny*, Hiſt lib. 2. c. 87. and *Thia* in his own time; and *Theraſia* in the *Ægean* in *Seneca*'s time, which was heaved up in the ſight of many Mariners then preſent and looking on.

I am not ignorant, that the learned Man I lately quoted, I mean *Alph. Borellus*, in his Book *De Incendiis Ætnæ*, is of opinion, that the middle part, or as he calls it, the kernel of that Mountain is firm and ſolid, without any great caverns or vacuities, and that all thoſe vaults and cavities in which the fire rages are near the ſuperficial or cortical part: And derides thoſe who fancy that *Ætna*, the *Æolian* Iſlands, *Lipara*, *Strongyle*, &c. and *Veſuvius* do communicate by ſubterraneous channels and paſſages running under the bottom of the Sea. But ſaving the reſpect due to him for his learning and ingenuity, there is good Authority on their ſide; and our ratiocinations againſt the poſſibility of

ſuch a thing muſt give place to the clear proof of matter of fact. *Julius Ethnicus* an ancient Writer, quoted by *Ludovicus Vives* in his Annotations upon S. *Auguſtine*, *De Civitate Dei*, gives us this Relation, *Marco Æmilio, Lucio Aurelio Conſulibus, Ætna mons terræ motu ignes ſuper verticem latè diffudit, & ad Inſulam Liparam mare efferbuit, & quibuſdam aduſtis navibus vapore pleróſque navales exanimavit: Piſcium vim magnam exanimem diſperſit, quos Liparenſes avidiùs epulis adpetentes contaminatione ventris conſumpti ſunt, ita ut novâ peſtilentiâ vaſtarentur inſulæ.* That is, Marcus Æmilius *and* Lucius Aurelius *being Conſuls, Mount* Ætna *being ſhaken by an Earthquake, caſt forth and ſcattered fire from its top far and wide. At which time the Sea at the Iſland of* Lipara *was boyling hot, and ſome Ships being burnt moſt of the Seamen were ſtifled with the vapour: beſides it diſperſed abroad a power of dead fiſh, which the* Liparenſians *greedily gathering up and eating, were conſumed with a contagious diſeaſe in their bellies: ſo that the Islands were waſted with a new ſort of peſtilence.* And Father *Kircher* the Jeſuite, in the Preface to his *Mundus Subterraneus* giving a Relation of an Earthquake which ſhook a great part of *Calabria*, and made notable devaſtations there, which himſelf ſaw, and

was

was in, *Anno* 1638. clearly demonſtrates that *Ætna*, *Stromboli*, and the Mountains of *Calabria*, do communicate by vaults and caverns paſſing under the bottom of the Sea. I ſhall inſert but one paſſage out of him, referring the Reader to the fore-quoted Preface for the reſt. *Hiſce calamitatibus* (ſaith he) *dum jactamur, ego curioſiùs intuitus* Strongylum, 60 *ferè milliarium intercapedine diſſitum, illum inſolito modo furere notavi*, &c. i. e. *While we were toſt with theſe calamities, I beholding curiouſly the Iſland* Stromboli *about* 60 *miles diſtant, obſerved it to rage after an unuſual manner, for it appeared all filled with fire in ſuch plenty, that it ſeemed to caſt forth mountains of flame: a ſpectacle horrid to behold and formidable to the moſt undaunted Spirit. In the mean time there was a certain ſound perceived as it were of Thunder, but by reaſon of the great diſtance from whence it came ſomewhat obſcure, which by degrees, proceeding forward in the ſubterraneous conduits, grew greater and greater, till it came to the place juſt underneath us,* [ they were at *Lopez* by the Sea ] *where it ſhook the Earth with ſuch a roaring or murmure and fury, that being not able to ſtand any longer upon our Legs, we were forced, to ſupport our ſelves, to catch hold upon any ſhrub or twig that was near us, leſt our limbs*

*ſhould be put out of joynt by too much ſhaking and concuſſion. At which time happened a thing worthy of immortal and eternal memory,* viz. *the ſubverſion of the famous Town of S.* Euſemia; which he goes about to relate. As for *Veſuvius*, if that be not hollow down to the very roots and foundations of it, how comes it to paſs that at the times of its deflagrations it ſhould vomit out ſuch floods of boiling Waters? as if we had not read of them in Hiſtories, and been told ſo by our Guide when we aſcended that Mountain, we muſt needs have perceived our ſelves by the mighty guls and channels in the ſides thereof, it being of it ſelf near the top ſo ſpungy and dry, that it is more likely to imbibe then to caſt off much rain in the Winter time. And again, what cauſes the Sea to recede at thoſe times, and that to ſo great a diſtance, that the Galleys have been laid dry in the very Haven of *Naples*?

Howbeit, I cannot poſitively aſſert the Mountains thus to have been raiſed. But yet whether without means, or by whatſoever means it were, a Receptacle for the Waters was prepared, and the dry Land and Mountains elevated, ſo as to caſt off the Waters, on the third day, and which is wonderful, the Cavities made to receive the Waters, and the whole *terra firma*, or dry Land

Land with its Mountains were ſo proportioned one to the other, as that the one was as much depreſſed below the Shores, as the other was elevated above them. And, as if the one had been taken out of the other, the Sea with all its Creeks, and Bays, and Inlets, and other Appendants was made, and is very near equal to the whole dry Land with its Promontories and Mountains, if not in *Superficies*, yet in bulk or dimenſions, though ſome think in both. Which equality is ſtill conſtantly maintained, notwithſtanding all Inundations of Land, and Atterations of Sea; becauſe one of theſe doth always nearly ballance the other, according to the vulgar Proverb we have before mention'd, *What the Sea loſes in one place, it gains in another.* If any ſhall demand, How the Sea comes to be gradually depreſſed, and deepeſt about the middle part; whereas the bottom of it was in all likelihood equal while the Waters covered the whole Earth? I anſwer, the ſame Cauſe that raiſed up the Earth, whether a ſubterraneous fire or *flatus*, raiſed up alſo the skirts of the Sea, the aſcent gradually decreaſing to the middle part, where, by reaſon of the ſolidity of the Earth, or gravity of the incumbent Water, the bottom was not elevated at all. For the encloſed fire in thoſe parts where its firſt accenſion

cenſion or greateſt ſtrength was, raiſed up the Earth firſt, and caſt off the Waters, and thence ſpreading by degrees, ſtill elevated the Land, and drove the Waters further and further; till at length the weight of them was too great to be raiſed, and then the fire brake forth at the tops of the Mountains, where it found leaſt reſiſtance, and diſperſt it ſelf in the open Air. The Waters alſo, where they found the bottom ſandy, or yielding, made their way into all thoſe Cavities the fire had made and left, filling them up as high as the level of the Ocean. Neither let any man imagine, that the Earth under the Water, was too ſoft and muddy to be in this manner raiſed by ſubterraneous fire; for I have ſhewn before, that the bottom of the Sea is ſo ſaddened and hardened by the weight of the incumbent Water, that the High-ways, beaten continually by Horſes and Carriages, are not more firm and ſolid. But omitting this (which is only a conjecture) I ſhall diſcourſe a little more concerning the Equality of Sea and Land.

It hath been obſerved by ſome, That where there are high Cliffs or Downs along the Shore, there the Sea adjoyning is deep; and where there are low and level Grounds, it is ſhallow: the depth of the Sea anſwering to the Elevation of the Earth above it: and as the Earth

Earth from the Shores is gradually higher and higher, to the middle and parts moſt remote from the Sea, as is evident by the deſcents of the Rivers, they requiring a conſtant declivity to carry them down; ſo the Sea likewiſe is proportionably deeper and deeper from the Shores to the middle. So that the riſing of the Earth from the Shores to the Mid-land is anſwerable to the deſcent or declivity of the bottom of the Sea from the ſame ſhores to the Mid-Sea. This riſing of the Earth from the Shores gradually to the Mid-land, is ſo conſiderable, that it is very likely the Altitude of the Earth in thoſe Mid-land parts above the *Superficies* of the Sea, is greater than that of the Mountains above the level of the adjacent Lands. To the height of the Hills above the common *Superficies* of the Earth do anſwer in *Brerewood's* Opinion the extraordinary Dephts or Whirl-pools that are found in the Sea, deſcending beneath the ordinary bottom of the Sea, as the Hills aſcend above the ordinary face of the Land. But this is but a conjecture of his, and to me it ſeems not very probable, becauſe it is not likely there ſhould be in the Sea extraordinary Depths of that vaſt length and extenſion, as thoſe huge Ridges of Mountains that run almoſt quite through the Continents. And becauſe I have

ſoberved

obſerved the Waters of Rivers that flow gently, but eſpecially of the Sea to level the bottoms of their Channels and Receptacles, as may be ſeen in thoſe parts of the Sea whoſe bottoms are uncovered at Low-water; and in dry Lands that have been deſerted by the Sea, as the Fens in the Iſle of *Ely*, and the *Craux* in *Provence* in *France*, *&c.* which appear to be a perfect Level, as far as one can ken. Though poſſibly the motion of the Sea may not deſcend down ſo low as thoſe Depths, and ſo may not level the bottoms of them.

But againſt what I have ſaid concerning the levelling of the bottom of the Sea, it may be objected, That Mariners and Divers find no ſuch thing, but the quite contrary, *viz.* That the bottom of the Sea is as unequal as the Land, ſometimes ten or twelve Fathoms on one ſide of the Ship, and One hundred on the other, as Mr. *Boyl* tells us in his *Relations about the bottom of the Sea*, conſonant whereto are the Accounts of Divers. *And I have* (ſaith my worthy Friend Dr. *Tanc. Robinſon* in one of his Letters to me) *read in Voyages, of vaſt Rocks of Salt obſerv'd in ſome places under the Sea.*

To which I anſwer, That I ſhould indeed have excepted ſuch places as are rocky, which bear a very little proportion to the Latitude and

and Extent of the Sea, and are for the moſt part not far off the Land. I my ſelf have ſeen ſo much of the bottom of the Sea, round about the Coaſts of *England*, and a good part of the Low-Countreys, of *Italy* and *Sicily*, that I think I may boldly pronounce in general, That where the bottom of the Sea is not rocky, but Earth, Owze or Sand, (and that is incomparably the greateſt part of it) it is by the motion of the Waters, ſo far as the reciprocation of the Sea extends to the bottom, brought to a level; and if it ſhould be now unequal, would in time be levelled again. By level I do not mean ſo as to have no declivity (for the reciprocation preſerves that, the floud hindring in good meaſure the conſtant carrying down of the bottom) but only to have an equal, uniform and eaſie deſcent from the Shores to the Deeps. Now all thoſe Reports of Divers and Navigators refer for the moſt part to rocky places. For Mariners ſeldom ſound but in ſuch places, and in ſhallows; and Urinators have no reaſon to dive where the bottom is level and ſandy. And that the motion of the Waters deſcends to a good depth, I prove from thoſe Plants that grow deepeſt in the Sea, becauſe they all generally grow flat in manner of a Fan, and not with Branches on all ſides like Trees; which is ſo contrived by the Providence

dence of Nature, becauſe the edges of them do in that poſture with moſt eaſe cut the Water flowing to and fro: And ſhould the flat ſide be objected to the Stream, it would be turned edgewiſe by the force of it; becauſe in that ſite it doth leaſt reſiſt the motion of the Water: whereas did the Branches of thoſe Plants grow round as in Trees, they would be thrown down backward and forward every Tide. Nay not only the herbaceous and woody ſubmarine Plants, but even the *Lithophyta* themſelves affect this manner of growing, if they be any thing ramoſe and riſe to a conſiderable height, as I have obſerved in various kinds of *Corals* and *Pori*. Hence I ſuſpect thoſe Relations of Trees growing at the bottom of the Sea, and bringing forth Fruit there. As for the *Maldiva Nut*, till better information, I adhere to *Garcias* his Opinion, That the Trees that bare thoſe Nuts were of old time, together with the Land on which they grew, overwhelmed by the inundations of the Sea, and there hardned in the Earth, and afterwards caſt up by the working of the Sea again. Which thing is very probable; for to this day ſome of thoſe *Maldiva* Iſlands are now and then drowned and ſwallowed up by the Sea. Further I do believe, that in the great depths of the Sea there grow no Plants at all,

all, the bottom being too remote from the external Air; which though it may pierce the Water ſo low, yet I doubt whether in quantity ſufficient for the vegetation of Plants. Nay, we are told, that in thoſe deep and bottomleſs Seas there are no Fiſh neither: yet not becauſe there are no Plants or Inſects to feed them; for that they can live upon Water alone, *Rondeletius* his Experiment about keeping them in a Glaſs, doth undeniably prove; but becauſe their Spawn would be loſt in thoſe Seas, the bottom being too cold for it to quicken there. This Anſwer and Diſcourſe, though it be inſerted into another Treatiſe, yet properly belongs to this place, to which I have therefore reſtored it, begging the Readers excuſe for this repetition. I now proceed.

That it is conſonant to the beſt Obſervations of the height of the Earth and its Mountains above the *Superficies* of the Sea; and of the depth of the Sea; that the one is anſwerable to the other. *Varenius* in his *Geogr.* witneſſeth, p. 152. *Cæterùm ex obſervata hactenus in pleriſque locis profunditate Oceani manifeſtum eſt, eam fere æqualem altitudini ſive elevationi montium & locorum Mediterraneorum ſupra littora, nimirum quantum hæc elevantur & extant ſupra littorum horizontem, tantum alvei maris infra eum deprimuntur;*

*muntur ; ſive quantum aſſurgit terra à littoribus verſus mediterranea loca, tantundem paulatim magis magiſque deprimitur uſque ad medii Oceani loca, ubi plerúmque maxima eſt profunditas.* That is, *From the depth of the Ocean, as far as hath been hitherto obſerved in moſt places, it is manifeſt that that [profundity] is near equal to the altitude or elevation of the Mediterraneous places above the Shores; that is to ſay, as much as theſe are elevated, and ſtand up above the Horizon of the Shores ; ſo much are the Channels of the Seas depreſſed below it : or, as much as the Earth riſeth from the Shores towards the Mediterraneous places ; ſo much is it by little and little more and more depreſſed to the middle parts of the Ocean, where the greateſt depth for the moſt part is.*

And *Brerewood* in his Enquiries pertinently to our purpoſe, ſuppoſeth the depth of the Sea to be a great deal more than the height of the Hills above the common ſurface of the Earth. — *For that in making eſtimation of the depth of the Sea, we are not to reckon and conſider only the height of the Hills above the common* Superficies *of the Earth, but the advantage or height of all the dry Land above the* Superficies *of the Sea: Becauſe the whole maſs of the Earth, that now appeareth above the Waters, being taken, as it were, out*

*out of the place which the Waters now poſſeſs, muſt be equal to the place out of which it was taken; and conſequently it ſeemeth, that the height or elevation of the one ſhould anſwer to the depth or deſcending of the other.* And therefore, as I ſaid, in eſtimating the deepneſs of the Sea, we are not to conſider only the erection of the Hills above the ordinary Land, but the advantage of all the dry Land above the Sea. Which latter, I mean the height of the ordinary Main Land, is in my opinion more in large Continents above the Sea, than that of the Hills is above the Land. For that the plain and common face of the dry Land, is not level or equally diſtant from the Center, but hath great declivity and deſcent towards the Sea, and acclivity or riſing toward the Mid-land part, although it appear not ſo to the common view of the Eye, is to reaſon notwithſtanding manifeſt. Becauſe, as it is found in that part of the Earth which the Sea covereth, that it deſcendeth lower and lower toward the midſt of the Sea; (for the Sea which touching the upper face of it is known to be level by nature, and evenly diſtant from the Center, is withal obſerved to wax deeper and deeper the further one ſaileth from the Shore towards the Main) Even ſo in that part which is uncovered the courſings and ſtream-

ings of Rivers on all ſides from the Mid-land parts towards the Sea (whoſe property we know is to ſlide from the higher to the lower) evidently declare ſo much. * This Author with *Damaſcen* ſuppoſes, that the unevenneſs and irregularity, which is now ſeen in the *Superficies* of the Earth, was cauſed either by taking ſome parts out of the upper face of the Earth in ſundry places to make it more hollow, and laying them in other places to make it more convex: or elſe (which in effect is equivalent to that) by raiſing up ſome, and depreſſing others to make room and receipt for the Sea: that Mutation being wrought by the Power of that Word, *Let the waters be gathered into one place that the dry land may appear.* This proportioning of the Cavities appointed to receive the Seas, to the protuberancy of the dry Land above the common *Superficies* of the Ocean, is to me a ſufficient Argument, to prove, that the gathering together of the Waters into one place, was a work of counſel and deſign; and if not effected by the immediate Finger of God, yet at leaſt governed and directed by him. So the Scripture affirms the place to receive the Sea, to have been prepared by God, *Pſalm* 104.8. Now in things of this nature, to the giving an account whereof whatever *Hypotheſis* we can poſ-

* *De fide Orthod. l. 2. c. 10.*

poſſibly invent, can be but meerly conjectural, thoſe are to be moſt approved that come neareſt to the Letter of Scripture, and thoſe that claſh with it to be rejected, how trim or conſiſtent ſoever with themſelves they may ſeem to be: this being as much, as when God tells us how he did make the World, for us to tell him how he ſhould have made it.

But here it may be objected, That the preſent Earth looks like a heap of Rubbiſh and Ruines; And that there are no greater examples of confuſion in Nature than Mountains ſingly or jointly conſidered; and that there appear not the leaſt footſteps of any Art or Counſel either in the Figure and Shape, or Order and Diſpoſition of Mountains and Rocks. Wherefore it is not likely they came ſo out of God's hands; who by the Ancient Philoſophers is ſaid ἀεὶ γεωμετρεῖν, and to make all things in number, weight and meaſure.

To which I anſwer, That the preſent face of the Earth, with all its Mountains and Hills, its Promontories and Rocks, as rude and deformed as they appear, ſeems to me a very beautiful and pleaſant object, and with all that variety of Hills, and Valleys, and Inequalities far more grateful to behold, than a perfectly level Country without any riſing

or protuberancy, to terminate the ſight: As any one that hath on the one hand ſeen the Iſle of *Ely*, or any the like Countrey exactly level, and extending on all ſides further then one can ken, or that hath been far out at Sea, where nothing is to be ſeen but Sky and Water: and on the other, from the Downs of *Suſſex* enjoyed that ſpatious and raviſhing proſpect of the Countrey on one hand, and the Sea on the other, comparing both objects, muſt neceſſarily confeſs.

2. They are uſeful to Mankind in affording them convenient places for habitation, and ſituations of Houſes and Villages; ſerving as Skreens to keep off the cold and nipping blaſts of the Northern and Eaſterly Winds, and reflecting the benign and cheriſhing Sun-beams, and ſo rendring their habitations both more comfortable and chearly in Winter; and promoting the growth of Herbs and Fruit-trees, and the maturation of their Fruits in Summer. Beſides, caſting off the Waters they lay the Gardens, Yards and Avenues to the Houſes dry and clean, and ſo as well more ſalutary as more elegant. Whereas Houſes built in Plains, unleſs ſhaded with Trees, ſtand bleak and expoſed to wind and weather; and all Winter are apt to be grievouſly annoyed with mire and dirt.

3. A Land ſo diſtinguiſhed into Mountains, Valleys and Plains is alſo moſt convenient for the entertainment of the various ſorts of Animals, which God hath created, ſome whereof delight in cold, ſome in hot, ſome moiſt and watery, ſome in dry and upland places, and ſome of them could neither find nor gather their proper food in different Regions. Some Beaſts and Birds we find live upon the higheſt tops of the *Alps*, and that all the Winter too, while they are conſtantly covered with Snow, as the *Ibex*, and *Rupicapra* or *Chamois* among Quadrupeds, and *Lagopus* among Birds.

4. The Mountains are moſt proper for the putting forth of Plants; yielding the greateſt variety, and the moſt luxuriant ſorts of Vegetables, for the maintenance of the Animals proper to thoſe places, and for Medicinal Uſes, partly alſo for the exerciſe and delight of ſuch ingenious perſons as are addicted to ſearch out and collect thoſe Rarities, to contemplate and conſider their Forms and Natures, and to admire and celebrate the Wiſdom of their Creator.

5. All manner of Metals, Minerals and Foſſils if they could be generated in a level Earth, of which there is ſome queſtion, yet ſhould they be dug or mined for, the Delfs muſt neceſſarily be ſo flown with Water,

(which to derive and rid away no *Adits* or *Soughs* could be made, and I much doubt whether Gins would ſuffice) that it would be extremely difficult and chargeable, if poſſible to work them at all.

6. Neither are the very tops of the higheſt Mountains barren of Graſs for the feeding and fattening of Beaſts. For on the Ridges of the high Mountains of *Jura* and *Saleve* near *Geneva*, and thoſe of *Rhætia* or the *Griſons* Countrey, which are the higheſt of all the *Alps*, excepting the *Valleſian* and *Sabaudian*, there are multitudes of Kine fed in Summer time, as I my ſelf can witneſs, having in my Simpling Voyages on thoſe of *Jura* and *Saleve* obſerved Herds of Cattel there, and many Dairy-houſes built, where I have been more than once refreſhed by their Milk and Milk-Meats. Nay there are but very few, and thoſe of the higheſt Summits of the *Alps* that keep Snow all Summer: and I was told by the Inhabitants, that one time or other, in ſeven or eight years ſpace, for the moſt part there came a Summer that melted all the Snow that lay on them too.

7. Another great uſe and neceſſity of the Mountains and Hills is for the Generation and Maintenance of Rivers and Fountains, which (in our *Hypotheſis*, that all proceed from

from Rain-water) could not be without them, or but rarely. So we ſhould have only Torrents, which would fail in Summer time, or any dry Seaſon, and nothing to truſt to, but ſtagnating Water reſerved in Pools and Ciſterns. Which how great an Inconvenience it would be, I need not take pains to ſhew. I ſay that Fountains and Rivers would be but rare were there no Mountains. For upon ſerious conſideration I find that I was too haſty in * concluding, becauſe I had obſerved no Fountains ſpringing up in Plains, therefore there were, or could be abſolutely none; and do now grant that there is reaſon to believe the Relations made of ſuch. For the whole dry Land being but one continued Mountain, and aſcending all along from the Sea to the Mid-land, as is undeniably proved by the Deſcent of Rivers even in plain Countries; the Water ſinking into the Earth, may run under ground, and according as the Vein leads it, break out in the ſide of this Mountain, though the place as to outward appearance be a Plain.

* *Obſervat. Phyſical, &c.*

I ſhall now add, That though it be poſſible that without Mountains there may be Springs, if there ſhould be Rains, (which it is ſomewhat queſtionable were there no Mountains, whether there could be or no, at

leaſt in hot Countreys) yet is it probable, that moſt of thoſe Springs we find in Plains or depreſſed places diſtant from Mountains may come along in ſubterraneous Channels from the next Mountains, and there break out. Monſieur *Blundel* related to the *Pariſian* Academy, what device the inhabitants of the lower *Auſtria*, which is encompaſſed with the Mountains of *Stiria*, are wont to uſe to fill their Wells with Water; They dig in the Earth to the depth of twenty or five and twenty feet, till they come to an *argilla* [clammy earth] then they bore a hole in the midſt of a ſtone about five or ſix inches broad, and through it bore the *argilla* ſo deep till the Waters breaks forcibly out; which Water it's probable comes from the neighbouring Mountains in ſubterraneous Channels. And *Caſſinus* obſerved, That in many places of the Territory of *Modena* and *Bologna* in *Italy*, they make themſelves Wells of ſpringing Water by the like artifice. They dig in the Earth till they come to the Water (which ſtagnates in common Wells) which they draw quite out. Then within this new digged Well they make two cylindrical Walls, concentrical one to another; the ſpace or interſtice between them they fill and ramm cloſe with well wrought *Argilla* or Clay, to keep out the ambient Water; which

which done, they ſink the Well deeper into the ground, and continue the inner Wall ſo low till the Earth underneath ſeems to ſwell by the force of the Water riſing up: And laſtly, they bore this Earth or Soil with a long Wimble; whereupon the Water breaks forth through the hole with a great force, ſo that it doth not only fill the Well, but overflows and waters the neighbouring fields with a conſtant ſtream: By this means the ſame Seigneur *Caſſini* made a Fountain at the Caſtle of *Urbin*, that caſt up the water five foot high above the level of the ground. It is very probable that theſe waters deſcend by ſubterraneous paſſages from the *Appennine* Mountains, which are about ten miles diſtant. If ſuch things may be done by Art, why may they not alſo by Nature? Nay, that the like are done we find by experience in the *Lacus Lugeus*, or *Zirchnitzer-Sea* in *Carniola*, which after it is empty of water running out at holes or pits in the bottom, (which it doth yearly in the Summer time, in the Months of *May*, *June*, or *July*) in the Autumn when it rains moderately, the water ſpouts out of ſome of the forementioned pits two or three fathoms perpendicularly, but when it rains very hard and long together, eſpecially with Thunder, then the water breaks forth with great force,

not

not only from the foreſaid pits, but likewiſe at a thouſand other Caves and Holes, ſpirting ſeveral fathoms high, from ſome perpendicularly, from others obliquely, ſo that there is not a pleaſanter ſight then this; and in a ſhort time fills the lake. A full deſcription and an account of all the *Phœnomena* of this admirable Lake ſee in *Philoſoph. Tranſact.* Numb. 191. p. 411. &c. So we ſee water may be brought down from the Mountains and raiſed up naturally in ſtrait Channels with that force, and to that height, as to exceed all the artificial jets in the World, if not in the altitude of the ſpout, yet in the bigneſs of the ſtream abundantly.

This end and uſe of Mountains I find aſſigned by Mr. *Halley* in his Diſcourſe concerning the original of Springs and Rivers, in theſe words: *This, if we may allow final cauſes* (and why may we not? what needs this heſitancy and dubitation in a thing that is clear?) *ſeems to be the deſign of the Hills that their ridges being placed through the midſt of the Continents, might ſerve as it were Alembicks to diſtil freſh water for the uſe of Man and Beaſt, and their heights to give a deſcent to thoſe ſtreams to run gently like ſo many veins of the Macrocoſm, to be the more beneficial to the Creation.*

But

But ſome may ſay, Granting there be ſome uſe and benefit of moderate Hills and Riſings; what neceſſity is there of ſuch extended Ridges of vaſt and towring Mountains, hiding their Heads among the Clouds, and ſeeming for Altitude to contend with the Skies? I anſwer there is very great uſe of them for repelling the Vapours exhaled by the Sun-beams in the hot Regions, and hindring their Evagations Northward, as we have already ſhewn, and ſhall not repeat. I might add hereto,

8. Thoſe long Series and Chains of Mountains are of great uſe for Boundaries and Limits to the Territories of Princes or Commonwealths, to ſecure them on thoſe parts from ſudden Incurſions of Enemies. As for the rudeneſs and confuſion of Mountains, their cragged and broken Rocks and Cliffs, and whatever other Diſorder there may be among them, it may be accounted for, from the manner of their firſt Generation, and thoſe other mutations they have been ſince obnoxious to, by Earthquakes, Eruptions of *Vulcano*'s, foundering and falling in of their Props and Foundations, and by time and weather too, by which not only the Earth is waſhed away, or blown off from the Stones, but the very Stones and Rocks themſelves corroded and diſſolved, as might eaſily

ſily be proved by Inſtances, could I ſpare time to do it.

To ſum up all relating to the Diviſion and Diſpoſition of the Water and Earth in brief.

1. I ſay, the Water being the lighter Element doth naturally occupy the upper place, and ſtand above the Earth, and ſo at firſt it did. But now we ſee it doth not ſo; the Earth being contrary to its nature forcibly elevated above it; being (as the *Pſalmiſt* phraſeth it) founded above the Seas, and eſtabliſhed above the Floods: and this becauſe it was beſt it ſhould be ſo, as I ſhall clearly prove and deduce in particulars in another Diſcourſe.

2. The dry Land is not elevated only upon one ſide of the Globe; for then had it had high Mountains in the middle of it, with ſuch vaſt empty Cavities within, as muſt be equal to the whole Bulk raiſed up, the Center of Magnitude muſt needs have been conſiderably diſtant from the Center of Gravity: which would have cauſed a very great and inconvenient inequality in the Motion of the parts of the Earth: but the Continents and Iſlands are ſo equally diſperſt all the Globe over as to counterballance one another, ſo that the Centers of Magnitude and Gravity concur in one.

3. The

3. The Continents are not of exactly equal and level *Superficies* or Convexity. For then the Parts ſubject to the Courſe of the Sun, called the *Torrid Zone*, would have been, as the Ancients fancied them, unhabitable for Heat and Drought. But there are huge Ridges and extended Chains of lofty Mountains, directed for the moſt part to run Eaſt and Weſt; by which means they give free admittance and paſſage to the Vapours brought in by the Winds from the *Atlantick* and *Pacifick* Oceans; but ſtop and inhibit their Excurſions to the North and South, either condenſing them upon their ſides into water, by a kind of external Deſtillation; or by ſtreightening and conſtipating of them compelling them to gather into Drops, and deſcend down in Rain.

Theſe are great things, and worthy the Care, Direction, and Diſpoſal of the Great and Wiſe Creator and Governour of all things: And we ſee they are accordingly excellently ordered and provided by him.

CHAP.

## CHAP. IV.

### *Of the Creation of Animals; ſome Queſtions reſolved.*

AS to the firſt Creation of Animals I have already propoſed two Opinions, both conſonant or reconcileable to the Scriptures.

1. That God Almighty did at firſt create the Seeds of all Animals, (that is, the Animals themſelves in little) and diſperſt them over the ſuperficial part of the Land and water, giving power to thoſe Elements to hatch and bring them forth; which when they had done, and all the Animals of theſe created Seeds were produced and perfected, there remained no more ability in them to bring forth any more; but all the ſucceeding owe their Original to Generation.

2. Becauſe ſome will not admit that God at firſt created any thing imperfect, we did propoſe that he might by his Almighty Power, out of the Water and Earth, make the firſt ſet of Animals in their full ſtate and perfection, (as it is generally believed he did *Adam*) and give to each *Species* a power by gene-

generation to propagate their like. For his commanding the Waters and Earth to produce ſuch and ſuch living Creatures, ſignifies that he did himſelf efficaciouſly form them out of the Earth and Water; as when he ſaith, *Let there be light*, &c. the meaning is not that he did permit or command ſomething elſe beſides himſelf to produce light; but that he did by his own Almighty power effectually create it. Indeed the Scripture doth in this manner interpret it ſelf: For whereas it is ſaid *verſes* 20. and 24. *Let the waters bring forth*, &c. and *Let the earth bring forth the living creature*, &c. in the next verſes it follows, *And God created great whales and every living creature that moveth*, &c. *And God made the beaſt of the earth*, &c. But now there may a further Queſtion or two be moved concerning the Creation of Animals.

1. Whether God created at firſt a great number of every kind of Animal all the Earth over, in their proper Places and Climates; or only two of each *Species*, a Male and a Female, from which all the reſt proceeded by generation? This latter opinion I find embraced by ſome modern Philoſophers, and it may be made probable by ſeveral Arguments.

Firſt

First from the Analogy to Mankind. There being at first only one Man and one Woman created, it is very likely, there were no more of any other Creatures, two being sufficient in a short time to stock the World.

Secondly, Because at the time of the General Deluge there were only two of each kind (of unclean Beasts) preserved in the Ark; and if two might then suffice, why not as well at the first Creation? And if there were no need of creating more, what likelyhood that there were more created?

But the first Opinion, That there were many at first created, seems more consonant to Scripture, which in the mention of the Creation of Aquatic Creatures useth the word *Abundantly*, Gen. 1. 20. *And God said, Let the waters bring forth abundantly the moving creature that hath life, and fowl that may fly above the earth in the open firmament of heaven.* And in the next verse it is said. That *the waters did bring them forth abundantly.* So that at least of Birds and Fishes there were many individuals at first created. As for Plants, certain it is that they were created dispersedly all the world over; they having no locomotive power, but being fixt to a place, and the Seeds of many of them being ponderous, and not portable by winds or any

any other means, and yet thoſe of the ſame *Species* to be found in far diſtant places, and on the tops of high Mountains as remote from each other, as the *Helvetick* and *Auſtrian Alps.*

2. Concerning the Creation of Animals there may yet a further Queſtion be moved, *viz.* Whether all Animals that already have been, or hereafter ſhall be, were at firſt actually created by God? or whether hath he given to each kind of Animal ſuch a power of generation, as to prepare matter and produce new individuals in their own bodies? Some are of opinion that God did himſelf at firſt actually create all the individual Animals that ever were or ever ſhall be, and that there is no ſuch thing as any production of new ones. For, ſay they, what were that but a creation of ſuch individuals? And what did God at the firſt Creation more then, if this be true, we ſee every day done, that is, produce a new Animal out of matter, which it ſelf prepares: All the difference is the doing that in an inſtant which the Creature muſt take time to do. For as for the preparation of matter, that muſt be made fit, be the Agent never ſo Omnipotent.

Beſides, the Animal-parent cannot be the Agent or Efficient in the generation or forming and nouriſhing of the *fœtus*. Becauſe that is a work of Art and Reaſon, which brute Creatures are not endued withal, nor indeed doth Man himſelf underſtand any thing of the proceſs of generation in himſelf, neither is conſcious of what is done in the Womb, ſo far is he from being the doer of it.

Again, it is moſt probable, if not certain, that moſt Animals have in them from the beginning the Seeds or Eggs of all the young they ſhall afterward bring forth, which when they were ſpent and exhauſt the Creature becomes barren or effete. So we ſee all the female *fœtus* of viviparous Quadrupeds are brought forth with their *Teſtes* or *Ovaria* in them, which are eſteemed parts of their bodies; and all Birds have in them from their firſt formation their Ovary or Egg-cluſter, containing the Seeds of all the Eggs they ſhall ever lay. Now had the Creature a power of producing new ones, what need was there that there ſhould be ſo many at firſt formed in them? and why might they not breed them as well afterwards, as at the beginning?

Here-

Hereupon theſe Philoſophers argue thus: Suppoſe we that God did at firſt create two Animals, a Male and a Female: The Female muſt be created with its *Ovaries* or *Teſtes*, which (as we ſaid) contained ſo many Seeds or Eggs as the Creature ſhould ever bring forth young. So it is clear that not only the firſt pair, but the firſt generation of Animals were actually created. Again, this firſt generation from their firſt appearance had each of them (the Females I mean) its *Ovaria* or Cluſters of Eggs, every one whereof had in like manner its Animalcule in it; ſo that this ſecond generation was alſo created in the firſt. The ſame may be demonſtrated of the third and fourth, and ſo on of all the generations that ſhall be as long as the World laſts.

Againſt this Doctrine it may be objected, Firſt, That it ſeems impoſſible that the Ovaries of one Female ſhould actually include and contain the innumerable myriads of Animals that may proceed from it in ſo many Generations as have been and ſhall be during the continuance of the World. Who can conceive ſuch a ſmall portion of matter to be capable of ſuch diviſion, and to contain ſuch an infinity of parts?

But to this it may be answered, That our sight doth not give us the just magnitude of things, but only their proportion, and what appears to the Eye as a Point, may be magnified so, even by Glasses, as to discover an incredible multitude of parts; nay, some Animals there are so small, that if a grain of Sand were broken into 8000000 of equal parts, one of these would not exceed the bigness of one of those Creatures, as Mr. *Lewenhoek* affirms. And Mr. *Hook* proceeds further, and says, that he had discovered some so exceeding small, that Millions of Millions might be contained in one drop of water. If these whole Creatures be so incredibly little, what shall we think of their parts containing and contained, their Entrails and Muscles, their Ovaries and Eggs? But for a sensible demonstration of the unconceivable, I had almost said infinite, divisibility of matter, I might refer the Reader to the Honourable Mr. *Boyl* of famous memory his Discourse concerning the strange subtlety of *effluviums*. I shall mention one or two Experiments. He dissolved one grain of filed Copper in Spirit of *Salt-armoniack*, and upon this Solution he poured so much distilled water by degrees, as till the fair and deep blew colour grew somewhat pale without being too dilute to be manifest.

manifeſt. And then carefully weighing the Veſſel and the Water, and ſubducting the weight of that out of this, he found the weight of the Liquor alone, when reduced to grains, to amount to 28534, ſo that a grain of Copper communicated a tincture to 28534 times its weight. Now conſidering that the weight of Copper to the weight of Water of the ſame bulk is *proximè* as 9 to 1, a grain-weight of Copper is in bigneſs but the ninth part of as much Water as weighs a grain; and ſo the formerly mentioned number of grains of Water muſt be multiplied by 9, to give us the proportion between the tinging body and tinged Liquor; whence it will follow, that a ſingle grain of Copper gave a blewneſs to above 256806 parts of limped Water, each of them as big as it. And to proſecute this Experiment further, he mixt together equal parts of diſtilled colourleſs Water, and of the ſaid tincted Liquor, and found, that though the colour were very faint and dilute, yet an attentive Eye could eaſily diſcern it to be blewiſh: whereby it appears that one grain of Copper was able to impart a colour to double the quantity of Water above-mentioned, that is to 513612 grains of Water.

Other Experiments there are in the ſame Diſcourſe made in odorate Bodies: *Having*, ſaith he, *for curioſity ſake ſuſpended in a pair of exact Scales, that would turn with a very ſmall part of a grain, a piece of* Amber-greece *bigger then a Walnut, and weighing betwixt an hundred and ſixſcore grains, I could not in three days and an half that I had opportunity to make the trial, diſcover even upon that balance, any decrement of weight in the* Amber-greece, *though ſo rich a Perfume lying in the open Air was like in that time to have parted with good ſtore of odoriferous ſteams. And a while after ſuſpending a lump of* Aſafœtida 5 *days and a half, I found it not to have ſuſtained any diſcernible loſs of weight, though, in ſpite of the unfavourable cold weather it had about it a neighbouring Atmoſphere repleniſhed with fœtid exhalations*, &c.

But what can be imagined more ſmall and ſubtile then the minute parts of the ſteams of Animals? The ſame Author in the ſame Tract tells us, That a good Setting Dog by his way of ranging the Fields, and and his other motions eſpecially of his head, would not only intimate the kinds of Game, whoſe ſcent he chanced to light upon, but would diſcover where Partridges had been (though perhaps without ſtaying in that place)

place) ſeveral hours before. He further tells us, That a very ſober Gentleman of his acquaintance, who had often occaſion to employ Blood-hounds, aſſured him, that if a Man had but paſſed over the Field, the ſcent would lye, ſo as to be perceptible enough to a good Dog of that ſort for ſeveral hours after. And an ingenious Hunter likewiſe aſſured him, That he had obſerved, that the ſcent of a flying and hunted Deer will ſometimes continue upon the ground from one day to the next following. He proceeds further, And now we may conſider theſe three things; *Firſt*, That the ſubſtance left upon the ground by the tranſient tread of a Partridge, Hare or other Animal, that doth but paſs along his way, does probably communicate to the graſs or ground but ſome of thoſe effluxions that tranſpire out of his feet, which being ſmall enough to eſcape the eye, may probably not amount to one grain in weight, or perhaps not to the tenth part of it. *Next*, That the parts of fluid Bodies, as ſuch, are perpetually in motion, and ſo are the inviſible Particles that ſwim in them, as may appear by the diſſolution of Salt or Sugar in Water, and the wandring of aqueous Vapours through the Air, even when the eye perceives them not. And *thirdly*, that though the Atmoſphere of one of theſe ſmall

parcels of the exhaling matter we are ſpeaking of may oftentimes be exceeding vaſt in compariſon of the emittent body, as may be gueſſed by the diſtance at which ſome Setters or Bloodhounds will find the ſcent of a Partridge or Deer; yet in places expoſed to the free Air or Wind, 'tis very likely that theſe ſteams are aſſiduouſly carried away from their fountain to maintain the forementioned Atmoſphere for ſix, eight or more hours, that is as long as the ſcent hath been obſerved to lye, there will be requiſite a continual recruit of ſteams ſucceeding one another. And that ſo very ſmall a portion of matter, as that which we were ſaying the *fomes* of theſe ſteams may be judged to be, being ſenſibly to impregnate an Atmoſphere incomparably greater than its ſelf, and ſupply it with almoſt continual recruits, we cannot but think, that the ſteams it parts with, muſt be of extreme and ſcarce conceivable minuteneſs. So far the Author. To which I ſhall add, That by the ſteams, I ſuppoſe, he means the minute Particles of which the ſteams are compounded. Now theſe minute Particles themſelves muſt be compound Bodies, becauſe they affect the ſence in a particular manner, ſo that a ſagacious Creature can diſtinguiſh by them, not only Species but Individuals; as a good Dog by

by the foot will find out his Maſter, though not only ſeveral other Creatures, but ſeveral Men have paſſed that way. Unleſs we will groundleſly affirm, that thoſe Particles are the *minima naturalia*, and that the Creature diſcerns them by their figure, or their different manner of motion.

A ſecond Objection of *Brunnerus* (as I find him quoted in *Peyerus* his *Merycologia*) is this, *Si cuncta Animalium membra jam formata exiſtant in ovo*, &c. If all the Members of Animals already formed do exiſt in the Egg, though for their ſmalneſs they eſcape our ſight; I cannot conceive, how by the force of imagination alone in a pregnant Woman, can be produced ſometimes Calves heads or feet, ſometimes a Dog's face, or other monſtrous Members; theſe productions being a certain and experimental proof, that the parts and members of Animals are formed and delineated originally in the Womb or Egg.

To this *Peyerus* replies, who then forms, who delineates ſuch monſters? Shall we accuſe God the Creator? But he is juſt, and doth not make enormous things: or will you blame Nature? That is the conſtant order and will of God, which never is deficient. Will you lay the fault upon the Plaſtick vertue or power reſiding in the Womb or Seed, and acting thoſe things? But that is

is a *Chimæra*, it is nothing, it is an Idol. There remain two things to which the cauſe may juſtly be imputed, The *imagination of the Mother*, which may and doth oftentimes effect wonderful things in the Body of the tender *Embryon*; and *the Devil*. If you refuſe to admit the former, you are obliged to accept the latter. And truly the Devil may, God ſo permitting, many ways abuſe Men, and transfigure the young in the Womb, to puniſh the wicked and nefarious actions of degenerate Mankind indulging themſelves in obſcene imaginations, or prepoſterous and unnatural impurities and pollutions. But do theſe errours and enormities take away the order of Nature? by no means, for from what is rare and extraordinary and ſeldom happens, there is no conſequence to be drawn. For though Monſters are ſometimes born, nothing hinders but that we may ſtill think, that the *Idea's* of the ſeveveral *Fœtus* may be præ-exiſtent and latent in the Eggs; and the event may teach us, that thoſe *Idea's* or *Embryo's* may by a violent cauſe be marred and deformed in the Womb; as Wax, though it be already figured, while it is ſoft is eaſily altered, and capable of receiving new impreſſions.

But

But againſt this Anſwer we may thus plead in defence of *Brunnerus*; As to what is ſaid of the Devil, it ſeems to be but a ſhift or refuge to have recourſe to when we are at a loſs, and pinch't with an Argument; as in the ancient Stage-plays, when they were put to a plunge, they were forced to bring in ſome θεὸς ἀπὸ μηχανῆς to help them out. And as for the imagination of the Mother, ſtrange it is, that that ſhould have any influence at all upon the formation of the *Fœtus*; the Mother not knowing any thing that's done in the Womb; nor being conſcious to her ſelf of any power to form or act any thing there; the *Fœtus* being an external thing to her, and no more a part of her, then an Egg is of the Hen that ſits upon it, affording nothing to it but warmth and nouriſhment. And we ſee Eggs may be hatched by the artificial heat of an Oven, without the incubation of a Hen. But granting that the imagination of the Mother may transform the *Fœtus*, why may it not as well originally form it out of prepared matter; and then what need of an Idea or minute Animalcule in the Seed? But whatever may be ſaid of Men, how come Monſters in Brutes, which according to *Peyerus* are meer Machines, and have no imagination or perception at all?

But

But not to lead the Reader into a Maze or Labyrinth, and leave him there, for my own part I muſt confeſs, that the Argument for the præexiſtence of the *Fætus's*, or their creation from the beginning, taken from the due number of Eggs that are in every Female from her firſt formation, and her being effete after they are ſpent, weighs very much with me, as I know not how to quit my ſelf of it. And on the other hand, if thoſe ſtories concerning Dogs and Serpents, &c. found in the wombs of Women be true (which are well atteſted) I acknowledge it very difficult, to give an Account how thoſe Animals came to be bred or formed there. But I had rather confeſs my ignorance of the manner of the production of ſuch præternatural and extraordinary things, then to permit it to have ſuch influence upon me, as to remove me from ſo well-grounded an Opinion concerning the ordinary production of Animals in a natural way.

The being of a Plaſtick Nature ſubordinate to God, notwithſtanding *Peyerus* makes an Idol of it, and charges thoſe with Idolatry who do believe it, I am not afraid to admit: my Reaſons for which I have given in another * Diſcourſe, and ſhall not here repeat.

* *Wiſdom of God in the Creation.*

The new Opinion of Mr. *Lewenhoek*, that all

all Animals proceed from an Inſect or Animalcule in the Male-ſperm, among other Reaſons, I am leſs inclinable to, becauſe of the neceſſary loſs of a multitude, I might ſay infinity, of them, which ſeems not agreeable to the Wiſdom and Providence of Nature. For ſuppoſing every Male hath in him all the Animalcules that he ſhall or may eject; they may, for ought I know, amount to millions of millions, and ſo the greateſt part of them muſt needs be loſt. Nay, if we take but one Coit, there muſt, in uniparous Creatures at leaſt, abundance be loſt. But if we ſuppoſe the *Fœtus* to be originally in the Egg, it is not ſo. For the Eggs of all ſorts of Creatures are ſo proportioned to the nature of the Animals, the time that they live, the time and number of their geſtations, and the number they bring forth at all times, that they will much about ſuffice for the time the Creatures are fit to breed and nouriſh their young: ſo that they may, if need be, be all brought forth and come to perfection.

*The End of the firſt Diſcourſe.*

DIS-

# DISCOURSE II.

## *Of the general Deluge in the Days of* NOAH, *its Cauſes and Effects.*

I Proceed now to ſay ſomething concerning the General Deluge in the days of *Noah*; which was alſo a matter of Ancient Tradition. I ſhall not enlarge much upon it, ſo as to take in all that might be ſaid, but confine my ſelf to Three Heads. 1. I ſhall confirm the Truth of the Hiſtory of the Deluge recorded in the Scripture, by the Teſtimonies of ſome ancient Heathen Writers. 2. I ſhall conſider the Natural Cauſes or Means whereby it was effected. 3. I ſhall enquire concerning the Conſequences of it, what conſiderable effects it had upon the Earth.

CHAP.

## CHAP. I.

### *Testimonies of Ancient Heathen Writers concerning the Deluge.*

FIrst then, I shall produce some Testimonies of Ancient Heathen Writers concerning the Deluge.

The first shall be that of *Berosus*, recorded by *Josephus*, in the fifth Chapter of his first Book of *Jewish Antiquities*, Βηρωσσὸς ὁ Χαλδαῖος διηγούμενος τὰ περὶ τὸν κατακλυσμὸν, οὕτω που διεξίεισι, &c. That is, *Berosus* the *Chaldæan* relating the Story of the Deluge writes thus. It is reported, that there is some part of the Vessel [the Ark] still remaining at the Mountain of the *Gordyæans*; and that certain Persons scraping off the *Bitumen* or Pitch, carry it away; and that men make use of it for Amulets, to drive away Diseases.

A second Testimony the same *Josephus* affords us in the same place, and that is, of *Nicolaus Damascenus*; who, saith he, gives us the History of the [Ark and Deluge] in these words; About *Minyas* in *Armenia* there is

is a great Mountain called *Baris*; to which it is reported, that many flying in the time of the Deluge were saved, and that a certain person was carried thither in an Ark, which rested on the top of it; the reliques of the Timber whereof were preserved there a long time. Besides these, *Josephus* tells us in the same place, that *Hieronymus* the *Egyptian*, who wrote the *Phœnician* Antiquities, and *Mnaseas*, and many others, whose words he alledges not, make mention of the Flood.

*Eusebius* superadds two Testimonies more. The one of *Melon* to this effect. There departed from *Armenia* at the time of the Deluge, a certain man, who together with his Sons had been saved; who being cast out of his House and Possessions, was driven away by the Natives. This man passing over the intermediate Region, came into the mountainous part of *Syria*, that was then desolate. This Testimony makes the Deluge Topical, and not to have reached *Armenia*.

The other is of *Abydenus* an ancient Writer, set down by *Eusebius*, *Præpar. Evangel. lib. 9. cap. 4.* Μεθ' ὃν ἄλλοι τε ἦρξαν, καὶ Σείσιθρος, ᾧ δὴ κρόνος προσημαίνει μὲν ἔσεσθαι πλῆθος ὄμβρων Δεσίου πέμπτῃ ὑπὶ δέκα, &c. After whom others reigned, and then *Sisithrus*, (so he calls *Noah*.) To whom *Saturn* fore-

foretold, that there ſhould be a great Flood of Waters upon the fifteenth Day of the Month *Deſius*; and commanded him to hide all Writings [or whatever was committed to writing] in *Heliopolis* of the *Sypparians*. Which ſo ſoon as *Siſithrus* had performed, he preſently ſailed away to *Armenia*, where what God had predicted to him, immediately came to paſs [or came upon him]. The third day, after the Waters ceaſed, he ſent forth Birds, that he might try whether they could eſpy any Land uncovered of Water. But they finding nothing but Sea, and not knowing whither to betake themſelves, returned back to *Siſithrus*. In like manner, after ſome days he ſent out others with like ſucceſs: But being ſent out the third time, they returned with their feet fouled with Mud. Then the Gods caught up *Siſithrus* from among Men: but the Ship remained in *Armenia*, and its Wood afforded the Inhabitants Amulets to chaſe away many Diſeaſes. Theſe Hiſtories accord with the Scripture as to the main, of the being of a Flood, and *Noah* eſcaping out of it; only they adulterate the Truth, by the admixture of a deal of fabulous ſtuff.

*Cyril* in his firſt Book againſt *Julian*, to prove the Deluge, alledges a paſſage out of *Alexander Polyhiſtor*. *Plato* himſelf (ſaith he)

he) gives us an obscure intimation of the Deluge, in his *Timæus*, bringing in a certain *Egyptian* Priest, who related to *Solon* out of the Sacred Books of the *Egyptians*, that before the particular Deluges known and celebrated by the *Grecians*, there was of old an exceeding great Inundation of Waters, and devastation of the Earth; which seems to be no other than *Noah*'s Flood.

*Plutarch* in his Book *De Solertia Animalium* tells us, That those who have written of *Deucalion*'s Flood, report, that there was a Dove sent out of the Ark by *Deucalion*, which returning again into the Ark, was a sign of the continuance of the Flood, but flying quite away, and not returning any more, was a sign of Serenity, and that the Earth was drained.

Indeed *Ovid* and other Mythologists make *Deucalion*'s Flood to have been universal: and it's clear, by the Description *Ovid* gives of it, that he meant the general Deluge in the days of *Noah*. And that by *Deucalion*, the Ancients together with *Ovid*, understood *Noah*; *Kircher* in his * *Arca Noæ* doth well make out. First, For that the Poet *Apollonius* makes him the Son of *Prometheus* in his third Book,

* L. 2. c. 6.

— τὸν δὲ

— — ἔνθα Προμηθεὺς
Ἰαπετιονίδης ἀγαθὸν τέκε Δευκαλίωνα.

Where *Prometheus* the Son of *Japetus* begat the Renowned *Deucalion*. 2. *Beroſus* affirms *Noah* to have been a *Scythian*. And *Lucian* in his Book *De Dea Syria* tells us, that many make *Deucalion* to have been ſo too. 3. The Scripture teſtifies, that Men were generally very corrupt and wicked in the days of *Noah*. And *Andro Teius* a very ancient Writer teſtifies, that in *Deucalion*'s time there was a great abundance of wicked Men, which made it neceſſary for God to deſtroy Mankind. 4. The Scripture ſaith, that *Noah* was a Juſt Man, and Perfect in his Generation. And *Ovid* ſaith of *Deucalion*, that

*Non illo melior quiſquam, nec amantior æqui*
*Vir fuit, aut illâ* [*Pyrrhâ* uxore ejus] *reverentior ulla Deorum.*

And a little after,

*Innocuos ambos, cultores numinis ambos.*

5. *Apollonius* ſaith of *Deucalion*, Πρῶτος ἀνθρώπων ἐβασίλευσε, *He firſt ruled over Men.* Which may very well be attributed to *Noah*

the Father and Restorer of Mankind, whose right the Kingdom was. 6. The sending out of a Dove, to try whether the Waters were abated, and the Flood gone off, is (we have seen) by *Plutarch* attributed to *Deucalion.* 7. *Lucian* in his *Timon*, and in his Book *De Dea Syria*, sets forth the Particulars of *Deucalion*'s, after the Example of *Noah*'s Flood. Δευκαλίων δὲ μοῦνος ἀνθρώπων ἐλίπετο εἰς γενεὴν δευτέραν εὐβουλίης τε καὶ τοῦ εὐσεβέος ἕνεκα, &c. Deucalion *was the only Man that was left for a second Generation, for his Prudence and Piety sake: And he was saved in this manner. He made a great Ark, and got aboard it, with his Wife and Children: And to him came Swine, and Horses, and Lions, and Serpents, and all other living Creatures, which the Earth maintains, according to their kinds by pairs; and he received them all, and they hurt him not; for there was by Divine Instinct a great friendship among them; and they sailed together in the Ark, so long as the Waters prevailed.* And in his *Timon* he saith, *That* Noah *laid up in the Ark plenty of all Provisions for their sustenance.*

By all this it appears, that the notion of a general Flood was every where current among the People, especially in those Countreys where the Ark rested, and where *Noah* afterward lived. And hence it was, that the

*Apa-*

*The two ancient Apamian Coyns taken out of Octav. Falconieri de Nummo Apamensi Deucalionæi Diluvij typum exhibente 8^vo^ Romæ.*

*By the Greek inscriptions they were stamp'd under Philippus Marcus Aurelius Alexander and Septimius Severus*

*Apameans*, whether of *Meſopotamia*, or *Syria*, or *Bythinia*, (for there were three Cities of that Name) coined Moneys in honour of the Emperours *Septimius Severus*, and *Philippus Arabs*, having on the Reverſe the Figure of an Ark, with a Man and a Woman ſtanding before it; and a Man and a Woman looking out of it; and two Doves above it, one flying with a Branch of a Tree in its Mouth, another reſting upon it. The Figures whereof, and a learned Diſcourſe thereupon out of *Falconerius*, may be ſeen in *Kircher's* * *Arca Noæ*. Which Moneys though they were coined long after our Saviour's time, and the divulgation of the Scriptures; yet being done by Ethnicks, do ſhew that the Story of the Deluge was known, and famous, and generally credited among them, as being near the place where *Noah* lived and converſed after the Flood. * L. 2 c. 6.

Howbeit I do not deny, that there was ſuch a particular Flood in *Theſſaly*, as they call *Deucalion's*, which happened Seven Hundred and Seventy Years or thereabouts after the general Deluge. I acknowledge alſo a more ancient Flood in *Attica* in the time of *Ogyges*, about Two hundred and thirty years before *Deucalion's*, by which the Countrey was ſo marred, that it lay waſte and uncultivated without Inhabitants for almoſt Two hundred years.

## CHAP. II.

### *Of the Cauſes of the Deluge.*

WHat were the inſtrumental Cauſes or Means of the Flood? Whether was it effected by natural or ſupernatural Means only? Whether was God no further concerned in it, than in ſo ordering ſecond Cauſes at firſt, as of themſelves neceſſarily to bring it in at ſuch a time?

Firſt, Thoſe that hold this Deluge was altogether miraculous, and that God Almighty created Waters on purpoſe to ſerve this occaſion, and when they had done their work deſtroyed them again, diſpatcht the Buſineſs, and looſe or cut the Knot in a few words. And yet this *Hypotheſis* is not ſo abſurd and precarious, as at firſt ſight it may ſeem to be. For the World being already full, there needed not, nor indeed could be any Creation of Water out of nothing, but only a Tranſmutation of ſome other Body into Water. Now if we grant all Natural Bodies, even the Elements themſelves, to be mutually tranſmutable, as few Men doubt, and ſome think they can demonſtrate; why might

might not the Divine Power and Providence bring together at that time ſuch natural Agents, as might change the Air or *Æther*, or both together into Water; and ſo ſupply what was wanting in Rains, and extraordinary Eruptions of Springs. To them that argue the Improbability of ſuch a change, from the great quantity of Air requiſite to the making of a little Water; it may be anſwered, That if Air, and all Bodies commixt with it, were together changed into Water, they muſt needs make a bulk of Water of equal quantity with themſelves, unleſs we will grant a Peripatetical Condenſation and Rarefaction; and hold that the ſame Matter may have ſometimes a greater, ſometimes a leſſer quantity or extenſion.

This Cauſe [the converſion of Air into Water] the Learned Jeſuite *Athanaſius Kircher*, in his Book *De Arca Noæ*, alledges as the undoubted inſtrumental Cauſe or Means of the Deluge in theſe words, *Dico totum illud aereum ſpatium uſque ad ſupremam regionem aeris, præpotentis Dei virtute, in aquas, per inexplicabilem nubium coacervatarum multitudinem, quâ replebatur, converſam eſſe; cujus ubertas tanta fuit, ut Aer ſupremus cum inferiori in Oceanum commutatus videri potuerit, non naturæ viribus, ſed illius cujus voluntati & imperio cuncta ſubſunt.* That is,

*I affirm, That all that Aereal ſpace that reaches up to the ſupreme Region of the Air, was, by the power of the Omnipotent God, and inſtrumentality of an inexplicable multitude of Clouds amaſſed together, wherewith it was filled, changed into Water, ſo that the upper and lower Air might ſeem to be tranſmuted into an Ocean, not by the ſtrength of Nature, but of him to whoſe Will and Power all things are ſubject.* And he is ſo confident * that this Deluge, in which the Water was raiſed fifteen Cubits above the higheſt Mountains, was not, nor could be effected by natural Cauſes; but by the right hand of the moſt High God only; that he ſaith, No Man can deny it, but he who doth not penetrate how far the power of Nature can extend, and where it is limited. To conclude, this *Hypotheſis* hath the Suffrages of moſt Learned Men. But becauſe the Scripture aſſigning the Cauſes or Means of the Inundation, makes no mention of any converſion of Air into Water, but only of the breaking up the Fountains of the Great Deep, and the opening of the Windows of Heaven, I ſuppoſe thoſe Cauſes may be ſufficient to work the Effect, and that we need not have recourſe to ſuch an Aſſiſtance.

* *Acta Noe* l. 2. c. 4

As

As for thoſe that make the Deluge Topical, and reſtrain it to a narrow compaſs of Land; their Opinion is, I think, ſufficiently confuted by a late ingenious * Author, to whom therefore I refer the Reader.

* *Dr.* Burnet.

I ſhall not undertake the Defence or Confutation of thoſe or any other *Hypotheſis*: only tell you which at preſent ſeems to me moſt probable, and that is theirs, who for a partial cauſe of the Deluge, aſſign either a change of the Center of the Earth, or a violent depreſſion of the Surface of the Ocean, and a forcing the Waters up from the ſubterraneous Abyſs through the Channels of the Fountains that were then broken up and opened.

Firſt then, let us conſider what Cauſes the Scripture aſſigns of the Flood; and they are two: 1. The breaking up the Fountains of the great Deep: 2. The opening of the Windows of Heaven. I ſhall firſt treat of this laſt. By the opening of the Windows of Heaven, is (I ſuppoſe) to be underſtood the cauſing of all the Water that was ſuſpended in the Air to deſcend down in Rain upon the Earth; the effect hereof here mentioned being a long continuing Rain of Forty days. And that theſe Treaſuries of the Air will afford no ſmall quantity of Water, may be made appear, both by Scripture and Reaſon.

Reason. 1. By Scripture, which opposes the Waters that are above the Heavens or Firmament, to those that are under them; which if they were not ἰσόῤῥοπα, and in some measure equal, it would never do. Gen. 1.6. *God is* said *to make a Firmament in the midst of the Waters, and to divide the Waters which were under the Firmament, from the Waters which were above the Firmament.* And this was the work of a whole day, and consequently no inconsiderable thing. By the Heavens or Firmament in this place, is to be understood the inferiour Region of the Air, wherein the Fowls fly: who *Gen.* 1.20. are said to *fly above the Earth, in the open Firmament of Heaven*; though elsewhere it be taken for the Celestial Regions, wherein the Sun, and Moon, and Stars are placed.

2. The same may be made appear, by Reason grounded upon Experience. I my self have observed a Thunder-Cloud in passage, to have in less than two hours space powred down so much Water upon the Earth, as besides what sunk into the parched and thirsty ground, and filled all Ditches and Ponds, caused a considerable Flood in the Rivers, setting all the Meadows on flote. [And Dr. *Wittie* in his *Scarborough Spaw* tells us, of great Spouts of Rain that ordinarily fall

ſall every year ſome time or other in Summer, that ſet the whole Countrey in a Flood.] Now had this Cloud, which might for ought I know, have moved Forty miles forward, ſtood ſtill and emptied all its Water upon the ſame ſpot of Ground it firſt hung over, what a ſudden and incredible Deluge would it have made there? and yet what depth or thickneſs of Vapours might remain uncondenſed in the Air above this Cloud, who knows? Now it is to be conſidered, that not only the Air upon the dry Land, but alſo all that covers the whole Ocean, is charged with Vapours, which are nothing elſe but diffuſed Water: all which was brought together by Winds, or what others Means ſeem'd good to God, and cauſed to deſtil down in Rain upon the Earth. And you may eaſily gueſs that it was no ſmall quantity of Water that was ſupplyed this way, in that it ſufficed for a Rain that laſted Forty natural days. And that no ordinary Rain neither, but Catarracts or Spouts of Water; for ſo the *Septuagint* interprets the words, Καὶ αἱ καταῤῥάκται τοῦ οὐρανοῦ ἠνεῴχθησαν, *And the Catarracts or Spouts of Heaven were opened.*

I return now to the firſt Cauſe or Means of the *Deluge* aſſigned by the Scripture, and that is the *breaking up of all the Fountains*

*of*

*of the great Deep.* By the *great Deep* in this place, I ſuppoſe, is to be underſtood the Subterraneous Waters, which do and muſt neceſſarily communicate with the Sea. For we ſee that the *Caſpian* and ſome other Seas, receive into themſelves many great Rivers, and yet have no viſible Outlets: and therefore by Subterraneous Paſſages, muſt needs diſcharge their Waters into the Abyſs of Waters under the Earth, and by its intervention into the Ocean again.

That the *Mediterranean* Sea doth not (as I ſometimes thought) communicate with the *Ocean* by any ſubterraneous Paſſages, nor thereby impart any Water to it, or receive any from it, may be demonſtrated, from that the *Superficies* of it is lower than the *Superficies* of the Ocean, as appears from the Waters running in at the Streights of *Gibraltar*; for if there were any ſuch Communications, the Water keeping its Level, the *Mediterranean*, being the loweſt, muſt by thoſe Paſſages receive Waters from the *Ocean*; and not the *Ocean*, which is (as we have proved) the higheſt, from the *Mediterranean*. But that it doth not receive any by Subterraneous Paſſages is moſt likely, becauſe it receives ſo much above Ground. Hence it neceſſarily follows, that the *Mediterranean* ſpends more in Vapour than it receives

ceives from the Rivers; which is Mr. *Halley*'s Concluſion; though in ſome of his Premiſes or *Hypotheſes* he is, I think, miſtaken, as 1. In that he numbers the *Tyber* amongſt his nine great Rivers, each of which may yield ten times as much Water as the *Thames*; whereas I queſtion whether that yields once ſo much; and whereas he paſſes by all the reſt of the Rivers as ſmaller than it; there are two that I have ſeen in *Italy* it ſelf, whereof the one, *viz.* the *Arnus*, on which *Florence* and *Piſa* ſtand, ſeemed to me not inferiour in bigneſs to the *Tiber*; and the other, *viz.* the *Atheſis* on which *Verona* ſtands, I could not gueſs to be leſs than twice as big. 2. In that he thinks himſelf too liberal in allowing theſe nine Rivers to carry down each of them ten times ſo much Water as the *Thames* doth. Whereas one of thoſe nine, and that none of the biggeſt neither, *viz.* the River *Po*, if *Ricciolus* his *Hypotheſes* and Calculations be good, affords more Water in an hour, than Mr. *Halley* ſuppoſes the *Thames* to do in a day; the hourly Effuſions of the *Po* being rated at eighteen millions of Cubical Paces by *Ricciolus*; whereas the daily ones of the *Thames* are computed to be no more than twenty five millions three hundred forty four thouſand Cubical yards of Water by Mr. *Halley*: but

a Geometrical Pace contains five Feet, *i. e.* 1⅔ of a Yard. Now if the *Po* pours ſo much Water hourly into the Sea, what then muſt the *Danow* and the *Nile* do? each of which cannot (I gueſs) be leſs than treble of the *Po*. *Tanais*, *Boryſthenes* and *Rhodanus* may equal, if not exceed it. Howbeit, I cannot approve *Ricciolus* his *Hypotheſes*, judging them to be too exceſſive, but do believe that as to the whole Mr. *Halley* comes nearer the truth. Sure enough it is, that in the *Mediterranean*, the Receipts from the Rivers fall ſhort of the Expence in Vapour: though in part of it, that is, the *Euxine*, the Receipts exceed, as appears from that there is a conſtant Current ſets outward from thence through the *Thracian Boſphorus*, and *Helleſpont*.

But though the *Mediterranean* doth indeed evaporate more than it receives from the Rivers, yet I believe, the Caſe is not the ſame with the *Caſpian* Sea; the *Superficies* whereof ſeems to me not to bear any greater proportion to the Waters of the Rivers that run into it, than that of the *Euxine* doth to its: which we have obſerved not to ſpend the whole Receipt in Vapour.

You'l ſay, Why then do not great Floods raiſe the Seas? I anſwer, as to the *Caſpian*, if it communicates with the Ocean, whether the

the Rivers bring down more or leſs, its all one; if more, then the Water keeping its Level, the *Caſpian* raiſeth the *Ocean*; if leſs, then the *Ocean* communicates to the *Caſpian*, and raiſes that. But as to the *Mediterranean*, we may ſay, that when it receives more on the one ſide, it receives leſs on the other, the Floods and Ebbs of the *Nilus* and the other Rivers counterbalancing one another; Beſides by reaſon of the Snows lying upon the Mountains all Winter, the greateſt Floods of thoſe great Rivers in *Europe* do not happen when the *Mediterranean* evaporates leaſt in the Winter time; but in the Spring.

You'l demand further, if the *Mediterranean* evaporates ſo much, what becomes of all this Vapour? I anſwer, It is caſt off upon the Mountains, and on their ſides and tops is condenſed into Water, and ſo returned again by the Rivers unto the Sea.

If you proceed to ask what becomes of the Surpluſage of the Water, which the *Mediterranean* receives from the *Ocean*, and ſpends in vapour; I anſwer, It ſeems to me that it muſt be caſt further off over the tops of the Mountains, and ſupply in part Rain to theſe Northern Countries: for we know that the South-wind brings Rain, with us and and all *Europe* over.

As to the great Ocean, I do not believe that it evaporates ſo much as the *Mediterranean*; both 1. Becauſe the whole *Mediterranean*, excepting the *Euxine*, lies in a hot Climate, and a great part of it as it were in a Valley, Ridges of high Mountains, *Atlas* on one ſide, and the *Alps* and *Apennine*, &c. on the other running along it. And 2. Becauſe the Surface of the whole *Ocean* bears a greater proportion to the Waters it receives from the Rivers of at leaſt this Continent, than that of the *Mediterranean* doth to its. And therefore I think alſo that Mr. *Halley* exceeds in his Eſtimate of the Heat of the *Superficies* of the Sea-water. I cannot perſwade my ſelf, that were it all commixt, I mean the hotter part with the cooler all the Surface over to ſuch a thickneſs, it would equal the heat of our Air in the hotteſt time of Summer. But I leave that to further Trial and Enquiry.

Here give me leave to ſuggeſt, that we are not to think, that all the Vapours that ſupply our Rains and Dews proceed from the Sea; no, a great part of them, *viz.* all that, when condenſed, waters the Earth, and ſerves for the Nutrition of Plants and Animals, (if not the ſame individual Water, at leaſt ſo much) was exhaled out of the Earth before, and returned again in Showers and Dews upon

on it. So that we receive no more from the Sea, than what the Rivers carry back, and pour into it again. But ſuppoſing Mr. *Halley*'s *Hypotheſes* to be good, and that the *Ocean* doth evaporate, and caſt off to the dry Land $\frac{1}{15}$ of an Inch thickneſs daily, and this ſuffices for the Supply of all the Rivers; how intolerably extravagant muſt their *Hypotheſes* be, who ſuppoſe the Rivers of all the World together to yield half an Ocean of water daily? Though I muſt confeſs my ſelf to be at a loſs as to thoſe vaſt Rivers of *America* of ninety Miles broad; for if they ſhould run with any thing a ſwift Current, it is indeed ineſtimable what a quantity of water they may pour forth. All therefore that I have to ſay of them is, That we want a true Hiſtory and Account of their *Phænomena* from their Fountains to their Out lets.

But in contradiction to what I have ſaid concerning the water keeping its level, and flowing in only at the Straits mouth, I underſtand that it is the concurrent and unanimous Vote and Suffrage of Mariners, Voyagers and Philoſophers, that there is an under-current at the Straits of *Gibraltar*, the *Thracian Boſphorus*, and the *Baltick Sound*. Particularly *M. Marſilly* affirms, That the lower water in the Channel of the *Thracian Boſphorus* is driven Northward into the

*Euxine Sea*, whilſt the upper flows conſtantly from the *Euxine* Southward. And that that which flows from the South is ſalter and heavier; which he found by letting down of a Veſſel cloſe ſhut up, fitted with a Valve to open at pleaſure, and let in the lower water, which being brought up and weighed, was obſerved to be ten Grains heavier than the upper. That the upper and lower flow contrary ways, he found by the Fiſhermens Nets, which being let down deep from Veſſels that were fixed, were always by the obſervation of the Fiſhermen, by the force of the Current driven towards the *Black Sea:* and by the letting down of a Plummet; for if it were ſtop't and detained at about five or ſix foot depth, it did always decline towards the *Marmora* or *Propontis*, but if it deſcended lower, it was driven to the contrary part, that is, the *Euxine*. But I think theſe Experiments are not ſufficient to eſtabliſh and demonſtrate ſuch an under-current, becauſe poſſibly there might be ſome miſtake in them: and Mr. *Smith* mentions no ſuch thing as any under-current there. But yet the ſame Mr. *Smith* endeavours to prove an under-current by two Experiments: The firſt is the running Tide and Half-tide in the *Offing* between the *North-Foreland* and *South-Foreland*. Now where it flows Tide and Half-

Half-tide, though the Tide of Flood runs aloft, yet the Tide of Ebb runs under-foot, that is, cloſe by the Ground. See *Philoſophical Tranſactions*, Numb. 158. p. 564.

The ſecond is, an Experiment made in the *Baltick Sound*: In one of the King's Fregats they went with their Pinnace into the middle Stream, and were carried violently by the Current: ſoon after they ſunk a Bucket with a large Cannon Bullet to a certain depth of water, which gave check to the Boats motion, and ſinking it ſtill lower and lower, the Boat was driven a head to Windward againſt the upper Current, the Current aloft being not above four or five Fathom deep; and the lower the Bucket was let fall, they found the under-current the ſtronger.

To all this I reply; That I do not underſtand how waters can run backward and forward in the ſame Channel at the ſame time. For there being but one declivity, this is as much to affirm, as that a heavy Body ſhould aſcend. It is a croſſing of Proverbs, Ἄνω πόλεμον, making Rivers aſcend to their Fountains, affirming that to be done, which all the World hitherto hath look't upon as abſurd and impoſſible. And therefore the Matter of Fact had need be well atteſted: which when to me it ſhall be, I muſt then *manus dare*, yield up the Bucklers, and ſtu-

dy ſome means to ſolve the *Phænomenon.*

Suppoſe we that the *Mediterranean* empties it ſelf into the Ocean by an under-current, there muſt be a declivity to carry it down, and conſequently the upper Superficies of this under-current muſt have its declivity too, and likewiſe the contiguous Superficies of the upper-current, and ſo the upper current muſt needs aſcend in its courſe inwards. If you ſay it's forc'd in by the motion of the Ocean, that ſeems unlikely, becauſe it runs in conſtantly, as well Ebb as Flood. And therefore there ſeems to be no better account of it than the Superficies of the *Ocean* being higher than that of the *Mediterranean.*

By the breaking up of the Fountains of the *Great Deep*, is I conceive meant, the making great Iſſues and Apertures for theſe Subterraneous waters to ruſh out. You will ſay, how could that be, ſith the water keeps its level, and cannot aſcend to a greater height above the common Center, than the Superficies of the Sea is, much leſs force its way, remove Obſtacles, and break open Paſſages?

I anſwer, According to them that hold that all Rivers come from the Sea by Subterraneous Paſſages, it is no more than daily happens. For they muſt needs grant, that the

the water in the Subterraneous Channels, is raiſed as far above the level of the Ocean, as are the Heads and Fountains of great Rivers. Which conſidering the height of their firſt ſprings up the Mountains, the length of their Courſes, and the ſwiftneſs of their Streams for a great part of the way, is very conſiderable, a conſtant declivity being neceſſary to their deſcent. And therefore I can by no means aſſent to the Learned Doctor *Plot*, (if I underſtand him aright) * *That the Valleys are as much below the Surface of the Sea, as Mountains are above it.* For how then could Rivers deſcend down to the Sea through thoſe Valleys; the Sea would rather run into them, and make *Sinuſes*; or elſe, if they were encloſed, the water would ſtagnate there, and make Pools.

* *Hiſt. Nat. Stafford*, p. 79.

If this be done by way of Filtration (which ſeems to be the moſt likely Means of raiſing the water) I do not ſee, but theſe Filters may ſuck up the whole Ocean; and if Apertures and Outlets large enough were made, pour it out upon the Earth in no long time. But I cannot be fully reconciled to this Opinion, though it hath great Advocates, eſpecially the fore-mentioned very Learned and Ingenious Perſon Dr. *Robert Plot*. I acknowledge Subterraneous waters: I grant a Confluence and Communication of Seas by under-

ground Channels and Paſſages: I believe that wherever one ſhall dig as deep as the level of the Sea, he ſhall ſeldom fail of water; the water making its way through Sand and Gravel and Stones. In like manner as it is obſerved of the River *Seine*, that in Floud-times all the neighbouring Wells and Cellars are filled with water, and when the River decreaſes and ſinks again, thoſe waters alſo of the Wells and Cellars diminiſh, and by degrees fall back into the River, ſo that there are ſcarce any Wells or Fountains in the Plains near the River, but their waters keep the level of the Rivers, riſing and falling with it.

But this inferiour conſtant Circulation and perpetual motion of water, ſeems to me not yet ſufficiently proved and made out. I think that the Patrons and Abbettors of this Opinion, have not ſatisfactorily demonſtrated, how it is, or can be performed. To what is offered concerning the Center of Gravity being nearer to our Continent, by reaſon of the Preponderancy of the Earth, and the Waters lying as it were on an heap in the other Hemiſphere, I anſwer, 1. That in the preſent terraqueous Globe, the *New World* which lyes between the two great Seas, and almoſt oppoſite to our Continent, doth in ſome meaſure counterpoiſe the Old, and take off

off a great part of the advantage, which by reaſon of its Preponderancy, it might otherwiſe have. Moreover, I am of Mr. *Brierwood*'s Opinion, that there may be, and is a vaſt Continent toward the Southern Pole oppoſite to *Europe* and *Aſia*, to counterpoiſe them on that ſide; nay, I do verily believe, that the Continents and Iſlands are ſo proportionably ſcattered and diſpoſed all the World over, as if not perfectly and exactly, yet very nearly to counter-ballance one another; ſo that the Globe cannot walter or reel towards any ſide: and that the Center of the convex Superficies of the Sea, is the true Center of the whole Terreſtrial Sphere, both of Motion and of Gravity. I add alſo of Magnitude: which is exceedingly convenient, as well for the facility as the equability of the Earths diurnal Motion. This *Hypotheſis* of the Continents being diſperſt equally on all ſides of the Globe, makes theſe Centers concur in one point, whatever cauſe we aſſign of the raiſing up the dry Land at firſt. Whereas if we ſhould ſuppoſe the dry Land to have been raiſed up by Earth-quakes only on one ſide of the Globe, and to have caſt off the water to the other, and alſo that the water could find no way into the Caverns that were left within; then the watery ſide muſt needs Preponderate the Land-ſide,

and bring the Center of Gravity nearer to its own *Superficies*, and ſo raiſe the Land ſtill a great deal higher, and make a conſiderable diſtance between the Centers of Magnitude and of Gravity. In our *Hypotheſis* of the equal diſperſion of the Continents and Iſlands no ſuch thing would happen: but each Continent taking it with all its internal Caverns, whether lighter or heavier than its bulk in water; that is, whether the water did make its way into the Caverns thereof, or did not, (for in the firſt caſe it would be heavier, (in the ſecond lighter) would have its counterpoiſe on the oppoſite ſide; ſo that the Centers would ſtill concur. The caſe would be the ſame if the dry Land were diſcovered, and the Mountains raiſed by the immediate application of the Divine Power.

2. The Sea being no where above a *German* Mile deep (for which we have good Authority) in moſt places not half ſo much, taking then as a middle term half a Mile. Suppoſe it every where half a Mile deep, (the Earth below the Sea, we have no reaſon to ſuppoſe of different Gravity) what proportion hath this half Miles thickneſs of water to the whole Terraqueous Globe, whoſe Semidiameter is by the account of Mathematicians Three thouſand four hundred and forty *Italian* Miles. What little advantage then

then can it have of the Earth oppoſite to it, in point of Preponderancy? 3. Granting the Center of Gravity ſhould be nearer our Continent: The Center being the loweſt place, and the Water a fluid Body, unleſs ſtopped, (which it might indeed be, if it were encompaſſed round with high Shores, as high as the Mountains, without any Breaks or Outlets in them) where it found declivity, it would deſcend as near as it could to it, without any regard of the Earths Preponderancy. And though we ſhould grant, that the drineſs of the Shores might ſtop it, and cauſe it to lye on a heap, yet would it run up the Channels of Rivers, till it came as near as poſſible to the Center of Gravity. Indeed the Rivers themſelves could not deſcend, but muſt run towards the middle of the Continent. All this I think will follow from this *Hypotheſis* by as good conſequence, as the waters being forced through the Subterraneous Channels out at the Springs. Again, I do not peremptorily affirm, that all Fountains do proceed from Rain; only I contend, that Rain may ſuffice to feed them, and that probably it doth feed ordinary Springs. This the Ingenious *French* Author doth well demonſtrate in the River *Seine*, and I believe it is demonſtrable in moſt other Rivers.

The

The little Brook that runs near my Dwelling, and hath its Head or Source not above four or five Miles off, where there is no extraordinary eruption of water, all along its Courſe receives ſmall Rivulets on both ſides; which though they make a conſiderable Stream at five miles diſtance from the Fountain-head, yet ſingly are ſo ſmall, that they may very well be conceived to drain down from the higher Grounds that lye about them. And taking the whole together, it is a very conſiderable length and breadth of Land, that contributes to the maintenance of this little River. So that it may eaſily be believed, that all its water owes its original to Rain: Eſpecially if it be conſidered further, that in Winter-time after the Rains are fallen, the Ground ſated, and the Ditches full, the Stream of this River during the whole Winter following, is for the moſt part, unleſs in Froſts, double of what it was in Summer. Which Exceſs can proceed from nothing but Rain and Miſts; at leaſt it would be raſhneſs to aſſign any other Cauſe, when there is ſo obvious and manifeſt an one. Moreover, that Rain affords no ſmall quantity of water, is clear alſo from great Floods, wherein it might be proved, that in few days there deſcends more water than would ſupply the ordinary Stream

Stream for a good part of Summer. Now to compare great things with ſmall; I have ſeen many of the biggeſt Rivers in *Europe*, the *Danow*, *Rhine*, *Rhoſne* and *Po*; and when I conſider the length of their Courſes, the multitude of conſiderable Rivers and Brooks they receive; and all theſe from their firſt riſe, made up by degrees of little Rivulets and Gills, like my neighbouring Brook; the huge Mountains and vaſt extent of higher Grounds they drain. To me it ſeems (and I have ſeen all their Streams near their Outlets, except the *Danows*, and it's after four hundred Miles deſcent) that they do not bear any greater proportion to the Rivers and Rivulets they receive, and the immenſe Tracts of Land that feed them, than my Brook doth to its ſmalls Rills and compaſs of Ground.

But in this, I confeſs, I do not deſcend to the niceneſs of Meaſuring and Calculation, but ſatisfie my ſelf with rude Conjectures, taking my Meaſures, as the *Ceſtrians* ſay, by the Scale of the Eye.

It will here be objected, *That the Rain never ſinks above ten Foot deep at moſt into the Earth, and therefore cannot ſupply the Springs.*

*Anſw.*

*Anſw.* This indeed, if it were true, would much enervate, nay, quite overthrow our Opinion: And therefore we muſt fortifie this Point, and effectually demonſtrate beyond all poſſibility of denial or contradiction, That Rain-water doth ſink down, and make its way into the Earth, I do not ſay Ten, or Twenty, nor Forty, but an Hundred, nay, Two or three hundred Foot or more.

Firſt then, in *Pool-hole* in the *Peak* of *Darbyſhire*, there are in ſome places conſtant droppings and deſtillations of water from the Roof: under each of which (to note that by the by) riſes up a Stone Pillar, the water precipitating ſome of thoſe ſtony Particles, which it had waſhed off the Rocks in paſſing through their Chinks. Theſe droppings continue all the Summer long. Now it ſeems clear to me, that the Rain-water making its way through the Veins and Chinks of the Rocks above it, and yet but ſlowly, by reaſon of the thickneſs of the Mountain, and ſtraitneſs of the Paſſages, ſupplies that dropping all the year round; at leaſt, this is much more rational than any different *Hypotheſis*. If the water diſtills down faſter in Winter time and wet Weather, than it doth in Summer (which I forgot to ask) the Experiment would infallibly prove our Aſſertion.

tion. In confirmation of this Argument, *Albertus Magnus* (as I find him quoted in Dr. *Wittie*'s *Scarborough Spaw*) tells us, *That at the bottom of a ſolid Rock one hundred and thirty Fathoms deep, he ſaw drops of water diſtilling from it in a rainy ſeaſon.*

Secondly, It is well known, and atteſted to me by the People at *Buxton* when I was there, that out of the mouth of the ſame *Pool hole*, after great and long continuing Rains, a great ſtream of water did uſually iſſue forth. And I am ſure it muſt make its way through a good thickneſs of Earth or Rocks, before it could come in there.

Thirdly, What becomes of all the water that falls on *Newmarket-Heath* and *Gogmagog* Hills, I preſume alſo *Salisbury-Plain*, and the like Spungy Grounds all Winter long, where we ſee very little run off any way? It muſt needs ſink into the Ground more than Ten Foot deep.

Fourthly, Many Wells, whoſe Springs lye at leaſt Twenty Foot deep, we find by experience, do often fail in great Droughts in Summer time.

Fifthly, In Coal Delfs and other Mines, in wet Weather the Miners are many times drown'd out, (as they phraſe it) though no water runs down into the Mouths of their Pits or Shafts. Nay, Dr. *Wittie* tells us in his

his *Description of the Vertues of the Scarborow Spaw*, pag. 105. *That after great Inundations of Rain, the Miners find the water frequently distilling through the solid Earth upon their Heads; whereas in Summer or dry Seasons, they find no interruption from thence at all.*

Further, to confirm this Particular, I wrote to my Honoured Friend Sir *Thomas Willughby* Baronet, desiring him to examine his Colliers concerning it, and send me word what report they make; and from him received this account. *If there be Springs lye before you come at the Coal, they carry the Water away; but if there be none, it falls into the Works in greater or less quantity according as the Rains fall.* Which Answer is so much the more considerable, in that it gives me a further clear Proof, that Springs are fed by Rain water, and not by any communications from the Sea; their original being above the Beds of Coal, they receiving the Rain-water into their Veins, and deriving it all along to their Fountains or Eruptions, above the Coals.

I might add out of him, [Dr. *Witty*] Fifthly, *pag.* 85. *That the* Scarborow Spaw, *notwithstanding it breaks out of Ground within Three or four yards off the foot of the Cliff, which is near Forty yards high, and within a quarter*

*quarter of a mile there is another Hill, that is more than as high again as the Cliff, and a deſcent all the way to the Cliff, ſo as the Rain-water cannot lye long upon the Ground, yet it is obſervable, that after a long Rain, the water of the* Spaw *is altered in its taſte, and leſſened in its operation; whereas a rainy day or two will not ſenſibly hurt it.* And now I am tranſcribing out of this Author, give me leave to add an Obſervation or two in confirmation of Rains being the Original of Springs. The firſt is (*pag.* 97) this;

*In* England, *in the years* 1654, 55. *and* 56. *when our Climate was drier than ever it had been mentioned to be in any Stories, ſo as we had very little Rain in Summer, or Snow in Winter, moſt of our Springs were dried up, ſuch as in the memory of the eldeſt Men living had never wanted water, but were of thoſe Springs we call* Fontes perennes, *or at leaſt were eſteemed ſo.* He inſtances alſo a Parallel Story out of *Heylin's Geography*, in the Deſcription of *Cyprus*, where the Author relates; *That in the days of* Conſtantine *the Great, there was an exceeding long drought there, ſo as in Thirty ſix years they had no Rain, inſomuch as all the Springs and Torrents, or Rivers, were dried up; ſo that the Inhabitants were forced to forſake the Iſland, and to ſeek for new Habitations for want of freſh water.*

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The ſecond is, *p.* 84. *That in the* Wolds *or* Downs *of* Yorkſhire *they have many Springs break out after great Rains, which they call* Gypſies, *which jet and ſpout up a great height.*

Neither is this Eruption of Springs after long Rains, proper and peculiar only to the *Wolds* of *Yorkſhire*, but common to other Countreys alſo, as Dr.* *Childrey* witneſſeth in theſe words: *Sometimes there breaks out water in the manner of a ſudden Land-flood, out of certain Stones, that are like Rocks ſtanding aloft in open Fields, near the riſing of the River* Kynet [*in* Kent] *which is reputed by the Common People a fore-runner of Dearth. That the ſudden eruption of Springs in places where they uſe not always to run, ſhould be a ſign of Dearth is no wonder. For theſe unuſual Eruptions,* (*which in* Kent *we call* Nailbourns) *are cauſed by extream gluts of Rain, or laſting wet Weather, and never happen but in wet years; witneſs the year* 1648. *when there were many of them:* —— *and to our purpoſe very remarkable it was, that in the year* 1654. *ſeveral Springs and Rivulets were quite dried up, by reaſon of the precedent Drought, which raged moſt in* 1651, 1652, *and* 1653. *As the Head of the* Stour, *that riſes near* Elham *in* Kent, *and runs through* Canterbury, *was dry for ſome Miles ſpace: and*

*Britannia Baconica.

*and the like happened to the Stream that croſſeth the Road-way between* Sittingburn *and* Canterbury *at* Oſpring *near* Feverſham, *which at other times ran with a plentiful Current, but then wholly failed.* So we ſee that it is not infrequent for new Springs to break out in wet years; and for old ones to fail in great Droughts. And *Strabo* in his firſt Book out of *Xanthus* the *Lydian* tells us, That in the time of *Artaxerxes* there was ſo great a Drought, that Rivers, and Lakes, and Wells of water failed, and were dried up.

I cannot here alſo forbear to add, the probable account he [ Dr. *Witty* ] gives of the Supply of the Spring-well on the Caſtle-hill at *Scarborough*; at which, I confeſs, I was ſomewhat puzzled. *This Well*, ſaith he, *though it be upon the top of the Rock, not many yards deep, and alſo upon the edge of the Cliff, is doubtleſs ſupplied by ſecret Channels within the Ground, that convey the Rain and Showers into it, being placed on a dependent part of the Rock, near unto which there are alſo Cellars under an old ruinated Chappel, which after a great Rain are full of Water, but are dried up in a long Drought.*

As for what is ſaid concerning the River *Volgas* pouring out ſo much water into the *Caſpian Sea*, as in a years time would make up a maſs of water equal to the Globe of

the Earth; and of the hourly effuſions of the River *Po* in *Italy*, which *Ricciolus* hath computed to amount to 18000000 cubical Paces of water. Whence a late learned Writer hath probably inferred, that all the Rivers in the World together, do daily diſcharge half an Ocean of waters into the Sea, I muſt confeſs my ſelf to be unſatisfied therewith. I will not queſtion their Calculations, but I ſuſpect they are out in their *Hypotheſes*.

The Opinion of Mr. *Edmund Halley*, that Springs and Rivers owe their Original to Vapours condenſed on the ſides of Mountains, rather than unto Rains, I acknowledge to be very ingenious, grounded upon good Obſervations, and worthy of its Author; and I will not deny it to be in part true in thoſe hot Countreys in the Torrid Zone, and near it; where, by reaſon of the great Heats, the Vapours are more copiouſly exhaled out of the Earth, and its likely carried up high in the form of Vapours. The inferiour Air at leaſt is ſo charged with them, and by that means ſo very moiſt, that in ſome places their Knives ruſt even in their Pockets; and in the Night, ſo very freſh and cold, partly alſo by reaſon of the length of the Nights; that expoſing the Body to it, cauſes Colds and Catarrhs, and is very dangerous: Whence alſo

alſo their Dews are ſo great, as in good meaſure to recompence the want of Rain, and ſerve for the nouriſhment of Plants; as they do even in *Spain* it ſelf.

I ſhall firſt of all propoſe this Opinion in the Words of the Author, and then diſcourſe a little upon it. After he had enumerated many of the high Ridges and Tracts of Mountains in the four Quarters of the World, he thus proceeds: *Each of which far ſurpaſs the uſual height to which the Aqueous Vapours of themſelves aſcend, and on the tops of which the Air is ſo cold and rarified, as to retain but a ſmall part of thoſe Vapours that ſhall be brought thither by the Winds. Thoſe Vapours therefore that are raiſed copiouſly in the Sea, and by the Winds are carried over the low Lands to thoſe Ridges of Mountains, are there compelled by the ſtream of the Air to mount up with it to the tops of the Mountains, where the water preſently precipitates gleeting down by the Crannies of the Stone; and part of the Vapour entring into the Cavities of the Hills, the water thereof gathers, as in an Alembick, into the Baſons of Stone it finds; which being once filled, all the overplus of water that comes thither, runs over by the loweſt place, and breaking out by the ſides of the Hills forms ſingle* Springs. *Many of theſe running down by the Valleys or Guts between the Ridges*

*of the Hills, and coming to unite, form little Rivulets or Brooks. Many of theſe again meeting in one common Valley, and gaining the plain ground, being grown leſs rapid, become a River: and many of theſe being united in one common Channel, make ſuch Streams, as the* Rhine, *the* Rhoſne, *and the* Danube, *which latter one would hardly think the Collection of Water condenſed out of Vapour, unleſs we conſider how vaſt a Tract of Ground that River drains, and that it is the ſum of all thoſe Springs, which break out on the South ſide of the* Carpathian *Mountains, and on the North ſide of the immenſe Ridge of the* Alps, *which is one continued Chain of Mountains from* Switzerland *to the* Black Sea. *And it may almoſt paſs for a Rule, that the magnitude of a River, or the quantity of water it evacuates, is proportionable to the length and height of the Ridges, from whence its Fountains ariſe. Now this Theory of Springs is not a bare* Hypotheſis, *but founded on Experience, which it was my luck to gain in my abode at St.* Helena; *where, in the night time on the tops of the Hills, about Eight hundred yards above the Sea, there was ſo ſtrange a condenſation, or rather precipitation of the Vapours, that it was a great impediment to my Celeſtial Obſervations; for in the clear Sky the Dew would fall ſo faſt, as to cover each*

*each half quarter of an hour my Glaſſes with little drops, ſo that I was neceſſitated to wipe them off ſo often; and my Paper, on which I wrote my Obſervations, would immediately be ſo wet with the Dew, that it would not bear Ink: by which it may be ſuppoſed, how faſt the water gathers in thoſe mighty high Ridges I but now named.*——At laſt he concludes: *And I doubt not but this* Hypotheſis *is more reaſonable, than that of thoſe who derive all Springs from the Rain waters, which yet are perpetual, and without diminution, even when no Rain falls for a long ſpace of time.*

This may, for ought I as yet ſee or know, be a good account of the Original of Springs in thoſe fervid Regions, though even there, I doubt, but partial; but in *Europe*, and the more temperate Countries, I believe the Vapours in this manner condenſed, have but little intereſt in the production of them, though I will not wholly exclude them. For,

Firſt, The Tops of the *Alps* above the Fountains of four of the greateſt Rivers in *Europe*, the *Rhine*, the *Rhoſne*, the *Danow*, and the *Po*, are for about Six Months in the year conſtantly covered with Snow, to a great thickneſs; ſo that there are no Vapours all that while that can touch thoſe Mountains, and be by them condenſed into

water; there falls nothing there but Snow, and that continuing all that while on the ground without Diſſolution, hinders all acceſs of Vapours to the Earth; if any roſe, or were by Winds carried ſo high in that form, as I am confident there are not. And yet for all that, do not thoſe Springs fail, but continue to run all Winter; and it is likely too, without diminution; which is a longer time than Droughts uſually laſt; eſpecially if we conſider that this want of ſupply, is conſtant and annual; whereas Droughts are but rare and accidental. So that we need not wonder any more, that Springs ſhould continue to run, and without diminution too, in times of Drought. True it is, that thoſe Rivers run low all Winter, ſo far as the Snow extends, and to a good diſtance from their Heads; but that is for want of their accidental ſupplies from ſhowers. Nay, I believe, that even in Summer, the Vapours are but rarely raiſed ſo high in a liquid form in the free Air, remote from the Mountains, but are frozen into Snow, before they arrive at that height. For the *Middle Region* of the *Air*, where the Walk of the Clouds is, at leaſt the ſuperiour part of it, is ſo cold as to freez the Vapours that aſcend ſo high, even in Summer time. For we ſee that in the height and heat of Summer, in great Thun-

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der ſtorms, for the moſt part it hails: nay, in ſuch Tempeſts I have ſeen mighty ſhowers of great Hail-ſtones fall, ſome as big as Nutmegs or Pigeons Eggs; and in ſome places ſuch heaps of them, as would load Dung Carts, and have not been diſſolved in a day or two. At the ſame Seaſons I have obſerved, in ſome ſhowers Hail-ſtones fall of irregular Figures, and throughout pellucid, like great pieces of Ice, with ſeveral ſnags or fangs iſſuing out of them: which how they could be ſupported in the Air till they amounted to that bulk and weight, is a thing worthy to be more curiouſly conſidered. For either they muſt fall from an incredible height, the Vapours, they encountred by the way, condenſing and as it were cryſtallizing upon them into Ice, and in time augmenting them to that bulk; or elſe there muſt be ſome ſtrange and unknown faculty in the Air to ſuſtain them. That the ſuperiour Air doth ſupport heavy Bodies better then the inferiour, the flight of Birds ſeems to be a clear demonſtration. For when they are mounted up on high, they fly with leſs fatigue, and move forward with greater facility, and are able to continue longer upon the wing without delaſſation then in the lower Air they could poſſibly do. And therefore when they are to make great flights,

they soar aloft in the Air, at a great height above the Earth. So have I often seen a flock of Wild-geese mounted so high, that though their flight be swift, they seemed to make but little way in a long time, and to proceed on their journey with ease and very leisurely by reason of their distance. And yet one would think this were contrary to reason, that the lighter Air, such as is the superiour, should better support a weighty Body than the heavier, that is, the inferiour. Some imagine that this comes to pass by reason of the Wind which is constantly moving in the upper Air, which supports any Body that moves contrary to it. So we see that those Paper-kites which Boys make, are raised in the Air by running with them contrary to the Wind: and when they are advanced to a great height, do but stick down the nether end of the Line to which they are fastned into the ground, they will be continued by the Wind at the same height they were, so long as it lasts and abides in the same quarter. In like manner the Birds flying contrary to the Wind, it supports and keeps them up. But if this were the only reason, methinks it should not be so easie, but rather very laborious for Birds to fly against the Wind so as to make any considerable progress in the superiour Air, as we

see

ſee they do. And therefore poſſibly they may be nearer the right, who ſuppoſe that the Gravity of Bodies decreaſes proportionably to their diſtance from the Earth: and that a Body may be advanced ſo high as quite to loſe its gravity and inclination or tendency to the Center: of which I do not ſee how it is poſſible to make experiment: for to what is ſaid by ſome to have been tried, that a bullet ſhot perpendicularly upward out of a great Gun, never deſcended again, I give no credit at all.

But to leave that, it is certain, that the Vapours after they are mounted up to a conſiderable height in the Air, are congealed and turned into the immediate component Principles of Snow, in which form I conceive they acquire a lightneſs, and are apt to aſcend higher than they could do, ſhould they retain the form of a humid Vapour; as, we ſee, Ice is lighter than Water, out of which it is frozen. But whether this be the reaſon of their aſcent or not, I am ſure of the matter of Fact, that theſe Snow-Clouds do aſcend far above the higheſt Tops of the *Alps*; For paſſing over a Mountain in the *Griſons* Country, on the very ridge of them, in the beginning of the Spring, it ſnowed very faſt during my whole paſſage for ſix hours; and yet the Clouds ſeemed to be

be as far above my head, as they do here in *England*; and a great height they muſt be, for the Snow to gather into ſo great flakes, and to continue ſo long falling; nay, it may be three times ſo long. Moreover, we ſee, that the higheſt Pikes and Summits of thoſe Mountains are covered with Snow. And I am aſſured, that all the Winter long at intervals, it Snows upon the Tops of the *Alps*.

2. In the Spring time, when the Snow diſſolves, ſome of theſe Rivers that flow down from the *Alpine* Mountains, run with a full ſtream, and overflow their Banks, in clear Sun-ſhine weather, though no Rain falls, as I my ſelf can witneſs; and therefore I preſume, that all the reſt do ſo too, as the Inabitants affirmed. But in the Summer time after the Snow hath been ſome time melted, their Streams decay again, notwithſtanding any Vapours condenſed upon them, proportionable to the Droughts; neither are there any Floods, but upon falls of Rain.

3. That the Snow diſſolved and ſoaking into the Earth, is the Original of the *Alpine* Springs; a probable Argument may be taken from the colour of the Water of thoſe Rivers which deſcend from the *Alps*, at leaſt on this Northern ſide, which I obſerved to be of a Sea-green, even to a great diſtance from

from their Heads; which whence can it proceed, unleſs from the Nitrous Particles of the Snow water, of which they conſiſt? Another alſo from the *Bronchocele*, or * *gutturine tumour*, an *Endemial* Diſeaſe of the Natives of thoſe parts, which Phyſicians and Naturaliſts attribute to the water they drink, not without good reaſon; becauſe, ſay they, it conſiſts of melted Snow, which gives it that malignant quality. † *Scaliger* ſpeaking of this Diſeaſe, ſaith. *Id ab aqua fit è nivibus liquefactis, quæ multum terreſtris & crudi continet.* But becauſe *Julius Palmarius* may poſſibly be in the right, who imputes this Diſeaſe to the ſteams of the Minerals, eſpecially Mercurial, wherewith theſe Mountains abound, which infect the waters, and render them noxious to the nervous parts; I ſhall not inſiſt upon this particular.

* Swoln Throats.

† *De Subtilit. Exerc. 60. Sect. 2.*

In confirmation of what I have ſaid concerning the Original of the *Alpine* Springs, I ſhall add the Opinion of the Learned *Alphonſus Borellus* concerning the Fountains ſpringing up or iſſuing out of the ſides of Mount *Ætna* in *Sicily*, *They are probably* (ſaith he) *either generated, or at leaſt encreaſed, from the melting of the Snow, which doth perpetually occupy the top of the Mountain. And this is manifeſt, in that they are not dimiſhed nor decreaſe in Summer, as alſe-*

*where*

*where it happens, but often flow more plentifully.* Lib. De incendiis Ætnæ.

What Mr. *Halley* ſaith of Springs, that they are perpetual and without diminution, even when no Rain falls for a long ſpace of time. If he underſtands it generally of all Springs, I add, that are accounted quick ones too, I deny his aſſertion: that ſome there may be of that nature, I grant: a reaſon whereof may be given, *viz.* that the Out-let is too ſmall to empty the water of all the Veins and Earth that lye above it in a long time. In our Native Country of *England* there are living and laſting Springs riſing at the feet of our ſmall Hills and Hillocks, to which I am ſure the Vapours contribute very little; which is ſo obvious to every man, that I think I need not ſpend time to prove it.

Yet muſt I not diſſemble or deny, that in the Summer time the Vapours do aſcend, or are carried up in that form by the ſides of the Mountains to their higheſt tops, and above them; for there falls no Snow there in the heat of Summer; and that which lies there, is for the moſt part diſſolved. But that Rain falls plentifully there, I my ſelf can witneſs; having been on the two higheſt Tops of the Mount *Jura*, (which keeps the Snow all Winter) on the one called *Thuiri*

in

in a Thunder ſhower; and on the other, called *la Dolaz*, in a ſmart and continuing Rain: So that I will not deny, but in Summer time the Vapours may contribute ſomewhat to the Springs; as I have elſewhere intimated: Clouds almoſt continually hanging upon the tops of the Mountains, and the Sun having there but little power.

And now that I am diſcourſing of theſe things, give me leave to ſet down an Obſervation I made in the laſt great Froſt, the ſharpeſt that was ever known in the memory of Man, which I had before met with in Books, but did not give firm credit to, that is, that notwithſtanding the violence of the Froſt, all the Springs about us, brake out and ran more plentifully than uſually they did at any other time: which I knew not what to impute to, unleſs perchance the cloſe ſtopping the Pores of the Earth, and keeping in that part, which at other times was wont to vapour away; which Account, I neither then could, nor can yet fully acquieſce in.

To this I will here add an Abſtract of a Letter written by my honoured Friend Dr. *Tancred Robinſon.*

*Tou*

*YOU may peradventure meet with ſome oppoſition againſt your Hypotheſis of Fountains, though indeed I am more and more confirm'd in your Opinion of them, and the uſe of the Mountains.* Father Tachart *in his ſecond Voyage to* Siam, *ſays, when he went up to the top of the* Table Mountain *at the* Cape of Good Hope, *the Rocks and Shrubs were perpetually dropping and feeding the Springs and Rills below, there being generally Clouds hanging on the ſides near the top. This conſtant diſtillation of Vapours from the Ocean on the many high Ridges of that great Promontory, may peradventure be one cauſe of the wonderful fertility and luxury of the Soil which produces more rare Plants and Animals then any known Spot of Ground in the World; the Diſcovery whereof is owing to the Curioſity and Wiſdom of the* Dutch. *The ſame obſervation hath been frequently made by our* Engliſh *Merchants in the* Madera *and* Canary *Iſlands, (the firſt of which is near in the ſame Latitude on the North of the* Æquator, *that the afore-mentioned* Cape *is in on the South) eſpecially in their Journeys up to the* Pike *of* Teneriff, *in which, at ſuch and ſuch heights, they were always wet to the skin, by the droppings of the great Stones, yet no Rain over head; the ſame I have felt in paſſing over*

*ver ſome of the* Alps. *The Trees, which in the Iſlands of* Ferro, *St.* Thomas *and in* Guiny, *are ſaid to furniſh the Inhabitants with moſt of their water, ſtand on the ſides of vaſt Mountains:* Voſſius *in his Notes on* Pomponius Mela, *affirms them to be* Arboreſcent Ferula's; *though indeed, according to* Paludanus *his dry'd Sample ſent to the Duke of* Wirtenberg *they ſeem rather to be of the Laurel kind; perhaps there are many different ſorts of them. I believe there is ſomething in the many Relations of Travellers and Voyagers concerning theſe Trees; but then I fancy they are all miſtaken, when they ſay, the water iſſues out of the Trees: The Vapors ſtop't by the Mountains condenſe and diſtil down by the Boughs. There being no Mountains in* Egypt, *may be one reaſon why there is little or no Rain in that Country, and conſequently no freſh Springs; therefore in their* Caravans *they carry all their water with them in great* Borracio's, *and they owe the Inundation of their River* Nile *to the ſtationary or periodical Rains on the high parts of* Æthiopia. *This may be the cauſe that the vaſt Ridge and Chain of Mountains in* Peru, *are continually water'd, when the great Plains in that Countrey are all dry'd up and parch't. This Hypotheſis concerning the Original of Springs from Vapours, may hold better in thoſe hot Regions within and near the*

*Tropicks*

*Tropicks (where the Exhalations from the Sea are moſt plentiful, moſt rarify'd, and Rain ſcarce) than in the Temperate and Frigid ones (where it rains and ſnows generally on the Vertices of the Mountains) yet even in our* European *Climates I have often obſerv'd the Firs, Pines, and other Vegetables near the Summits of the* Alps *and* Appennines, *to drop and run with water, when it did not rain above; ſome Trees more than others, according to the denſity and ſmoothneſs of their Leaves and Superficies, whereby they ſtop and condenſe the Vapours more or leſs. The Beams of the Sun having little force on the high parts of Mountains, the interrupted Vapours muſt continually moiſten them, and (as in the head of an Alembick) condenſe and trickle down; ſo that we owe part of our Rain, Springs, Rivers, and Conveniencies of Life, to the operation of Diſtillation and Circulation by the Sun, the Sea, and the Hills, without even the laſt of which, the Earth would ſcarce be habitable. This preſent year in* Kent *they have had no Rain ſince* March *laſt; therefore moſt of their Springs are dry at this very day, as I am aſſur'd from good Hands. The high ſpouting of water even to three Fathoms perpendicular out of innumerable holes on the Lake* Zirknitz *in* Carniola *after Rains on the adjacent Hills, exceeds the*

*ſpirting*

*ſpirting Gips or natural* Jet d'Eaus *we have in* England.

Nouemb. 12.
1691. Tancred Robinſon.

Since the receipt of this Letter, an Experiment ( give me leave ſo to call it ) occurred to me, which much confirmed me in the belief and perſwaſion of the Truth of thoſe Hiſtories and Relations which Writers and Travellers have delivered to us concerning dropping Trees in *Ferro*, *S. Thome*, *Guiny*, &c. of which before I was ſomewhat diffident; and likewiſe in the approbation of the *Hypotheſis* of my Learned Friend Dr. *Tancred Robinſon* for the ſolving of that *Phænomenon*. The ſame alſo induces me to believe, that Vapours may have a greater intereſt in the production of Springs even in temperate and cold Regions, than I had before thought. The Experiment or Obſervation is this,

About the beginning of *December* 1691. there happened to be a Miſt, and that no very thick one, which continued all day: the Vapour whereof, notwithſtanding the Trees were wholly deveſted of Leaves, condenſed ſo faſt upon their naked Branches and Twigs, that they dropped all day at ſuch a rate, that I believe the water diſtilling from

a large Tree in twenty four hours had it been all received and reſerved in a Veſſel, might have amounted to a Hogſhead. What then may we rationally conjecture, would have dropped from ſuch a Tree; had it been covered with Leaves of a denſe Texture, and ſmooth *Superficies*, apt to collect the Particles of the Vapour, and unite them into Drops?

It is clear by this effect, that Trees do diſtil water apace when Clouds or Miſts hang about them; which they are reported by *Benzo* conſtantly to do about the Fountain Tree in *Ferro*; except when the Sun ſhines hot upon it. And others tell us, that that Tree grows upon a Mountain too: So that it is no wonder, that it ſhould drop abundance of water. What do I ſpeak of that Tree? all the Trees of that kind grow on the ſides of vaſt Mountains, as Dr. *Robinſon* hath noted, yet he thinks that now and then many Trees may run and diſtil in Plains and Valleys, when the Weather has been fair, but then this *Phænomenon* happens very rarely; whereas in the other 'tis regular and conſtant. Beſides that in hot Regions Trees may in the Night time diſtil water, though the Air be clear, and there be no Miſt about them, ſeems neceſſarily to follow, from Mr. *Halley*'s Experiment.

Now

Now if there be in Miſts thus much Vapour condenſed upon Trees, doubtleſs alſo there is in proportion as much upon the Surface of the Earth and the Graſs: And conſequently, upon the Tops and Ridges of high Mountains, which are frequently covered with Clouds or Miſts much more; ſo much as muſt needs have a great intereſt in the production and ſupply of Springs, even in temperate Countries.

But that inviſible Vapours, when the Sky is clear, do at any time condenſe ſo faſt upon the Trees, as to make them drop, I never obſerved in *England* or elſewhere, no not in the Night ſeaſon; though I do not deny, but upon the *Appennine* and Southern ſide of the *Alps*, and elſewhere in the hotter parts of *Europe* in Summer Nights they may. However, conſidering the Penetrancy of ſuch Vapours, that in moiſt Weather they will inſinuate themſelves deeply into the Pores of dry Wood, ſo that Doors will then hardly ſhut, and Chinks and Crannies in Boards and Floors be cloſed up, I know not but that they may likewiſe ſtrike deep into the Ground, and together with Miſts contribute to the ſeeding and maintenance of Springs, in Winter-time, when the Sun exhales but little; it being an Obſervation of the Learned * *Fromondus*, *Quod hyeme nec nivali, nec imbrifera*

* *Meteor. lib.* 3. *c.* 7. *Artic.* 3.

*imbrifera fontes tamen aquam largiùs quàm æſtate (niſi valdè pluvia ſit) vomant. That in Winters neither ſnowy nor rainy, yet fountains pour forth more water than in Summer, unleſs it happen to be a very wet ſeaſon.* Yet are their Contributions inconſiderable, if compared with the ſupplies that are afforded by Rains. And one reaſon why in Winter Fountains flow more plentifully, may be, becauſe then the Sun defrauds them not, nor exhales any thing out of the Earth, as in Summer time he doth.

Therefore whenever in this Work I have aſſigned Rain to be a ſufficient or only cauſe of Springs and Rivers, I would not be underſtood to exclude, but to comprehend therein Miſts and Vapours; which I grant to have ſome intereſt in the production of them, even in temperate and cold Regions; and a very conſiderable one in Hot. Though I cannot be perſwaded, that even there they are the ſole Cauſe of Springs, for that there fall ſuch plentiful and long continuing Rains, both in the *Eaſt* and *Weſt-Indies* in the Summer Months: which muſt needs contribute ſomething to their Original.

But to return from whence we digreſſed, that is, to the conſideration of that *Hypotheſis* or Opinion, That all the Rivers of the Earth diſcharge into the Sea half an Ocean of waters daily.

I

I have read of ſome Philoſophers, who imagined the Earth to be a great Animal, and that the Ebbing and Flowing of the Sea was the reſpiration of it. And now methinks, if this Doctrine be true, we have a further Argument to confirm their Opinion: For this perpetual Motion of the water anſwers very well to the Circulation of the Blood; the water moving faſter in proportion to its bulk through the Veins of this round Animal, then the Blood doth through thoſe of other living Creatures. To which we may add further, that to maintain this conſtant Circulation there is alſo probably about the Center of the Earth a perpetual Fire, anſwering to the *Biolychnium* in the heart: but if not about the Center, yet certainly in profound Caverns, and even under the very bottoms of the Seas; to which ſome, and no mean Philoſophers, have attributed the Ebbing and flowing of its waters.

Let us then ſuppoſe that the Rivers do daily carry down to the Sea half an Ocean of water, and that the Rain ſupplies all that, as our Opinion is, and ſee what we can infer from thence: I think it will be granted that ordinarily (*communibus annis*) the Rain that falls in a whole year amounts not to above one quarters continual Rain. Now if this ſuffices for a daily effuſion of half an Ocean,

it is clear, that if it should rain without any intermission all the year round, the Rivers would pour out two Oceans into the Sea daily. And so in forty days continual Rain there would distil down upon the Earth eighty Oceans of Water. A prodigious quantity indeed and scarce credible, which if the water be carried off as fast as it comes on, infers a Circulation of a quantity of water equal to the whole Ocean twice in twenty four hours. Supposing then that so much water daily descends upon the Earth, I argue thus, The water falling upon the Earth must have some time to run down to the Sea, and according to the small declivity of the Continent, (suppose the Mountains pared off and the Land levelled) a considerable one too: and we see it actually hath, to that the Floods in great Rivers follow some days after the falls of Rain upon the higher grounds. And so though at the time of the general Deluge the waters hastned down to the Sea as fast as the declivity of the Earth would permit, yet they breaking out of the Fountains of the Abyss, and falling down from the Clouds abundantly faster than they could run down the gentle declivity of the Earth, it deserves to be considered whether by the end of forty days there might not have been water enough amassed to cover the Mountains fifteen.

teen Cubits high. And yet the Scripture doth not in plain terms ſay, that ever the waters of the Flood aroſe fifteen Cubits above the tops of the higheſt Mountains, as Mr. *Warren* well obſerves.

Beſides, we are further to conſider, that this forty days Rain at the time of the Deluge, was no ordinary one, ſuch as thoſe that uſually diſtil down leiſurely and gently in Winter time, but like our Thunder-ſtorms and violent Showers, Catarracts, and Spouts, which pour forth more water in an hour then they do in four and twenty. So that in forty natural days the Clouds would empty out upon the Earth not eighty Oceans of water, but above twenty times that quantity. If by the Windows of Heaven are meant Catarracts, as the *Septuagint* interpret the word. And ſo we need not be to ſeek for water for a Floud; for the Rain alone falling at that rate we have mentioned, would if the Opinion of thoſe men (who hold that the Rivers diſcharge into the Sea half an Ocean daily) were true, in the ſpace of forty natural days afford water enough, ſuppoſing it run off no faſter than uſually it doth, to cover the Earth, Mountains and all. Neither yet did the Mountains help, but rather hinder the deſcent of the waters down to the Sea, ſtraitning it into Channels, obſtructing

its passage, and forcing it to take Circuits, till it got above the Ridges and Tops of them.

As to this Argumentation and Inference the case is the same, if we hold that the Water circulates through the Veins of the Earth. For supposing the Rivers pour forth half an Ocean daily, and granting that in times of Floods their streams are but double of their usual Currents (though I verily believe they are more than quadruple) and that the effusions of the Fountains be in like measure augmented, it will follow that the daily discharge of the Rivers will amount to two Oceans. Now at the time of the general Deluge both these Causes concurred. For there being a constant Rain of forty days, there must on that account be a continual Flood, and the Fountains of the great Deep being broken up, they must in all likelyhood afford as much Water as the Rain: which whether it would not suffice in forty natural days to produce a Flood as big as that of *Noah*, notwithstanding the continual descent and going off of the Waters, I propose to the consideration of the Ingenious. Especially if we allow, as is not unreasonable to suppose, that the Divine Providence might at first cause a contrary Wind to stop and inhibit the descent of the Waters, as afterwards

terwards he raiſed an aſſiſting one to carry them off.

I have but one thing more to add upon this Subject, that is, that I do not ſee how their Opinion can be true, who hold that ſome Seas are lower than others; as for Example, the *Red Sea* than the *Mediterranean*. For it being true that the Water keeps its level, that is, holds its Superficies every where equidiſtant from the Center of Gravity; or if by accident one part be lower, the reſt by reaſon of their fluidity will ſpeedily reduce the Superficies again to an equality. The Waters of all Seas communicating either above, or under ground, or both ways, one Sea cannot be higher or lower than another: but ſuppoſing any accident ſhould elevate or depreſs any, by reaſon of this confluence or communication it would ſoon be reduced to a level again, as might demonſtratively be proved.

But I return, to tell the Reader what I think the moſt probable of all the Cauſes I have heard aſſigned of the Deluge, which is, the Center of the Earth being at that time changed, and ſet nearer to the Center or middle of our Continent, whereupon the *Atlantick* and *Pacifick* Oceans muſt needs preſs upon the Subterraneous Abyſs, and ſo by mediation thereof, force the Water upward,

ward, and at laſt compel it to run out at thoſe wide Mouths and Apertures made by the Divine Power breaking up the Fountains of the great Deep. And we may ſuppoſe this to have been only a gentle and gradual Emotion, no faſter than that the Waters running out at the bottom of the Sea, might accordingly lowre the Superficies thereof ſufficiently, ſo that none needed run over the Shores. Theſe Waters thus poured out from the Orifices of the Fountains upon the Earth, the declivity being changed by the removal of the Center, could not flow down to the Sea again, but muſt needs ſtagnate upon the Earth, and overflow it; and afterwards the Earth returning to its old Center, return alſo to their former Receptacles.

If any ſhall object againſt this *Hypotheſis*, becauſe by it the Flood will be render'd Topical, and reſtrained only to the Continent we live in: though I might plead the Unneceſſarineſs of drowning *America*, it being in all probability unpeopled at that time; yet becauſe the Scripture uſeth general expreſſions concerning the extent of the Flood, ſaying, *Gen.* 1. 19. *And all the high hills that were under the whole Heaven were covered*; and again, verſe 22. *All in whoſe noſtrils was the breath of life, of all that was in the dry*

*dry land died.* And becauſe the *Americans* alſo are ſaid to have ſome ancient Memorial Tradition of a Deluge; and the Ingenious Author of the *Theory of the Earth* hath by a moderate Computation, demonſtrated, that there muſt be then more People upon the Earth, than now: I will propoſe another way of ſolving this *Phænomenon*, and that is, by ſuppoſing that the Divine Power might at that time, by the inſtrumentality of ſome natural Agent, to us at preſent unknown, ſo depreſs the Surface of the Ocean, as to force the Waters of the Abyſs through the forementioned Channels and Apertures, and ſo make them a partial and concurrent Cauſe of the Deluge.

That there are at ſome times in the courſe of Nature extraordinary preſſures upon the Surface of the Sea, which force the Water outwards upon the Shores to a great height is evident. We had upon our Coaſts the laſt Year an extraordinary Tide, wherein the Water roſe ſo high, as to overflow all the Sea-Banks, drown multitudes of Cattel, and fill the lower Rooms of the Houſes of many Villages that ſtood near the Sea, ſo that the Inhabitants, to ſave themſelves, were forced to get up into the upper Rooms and Garrets of their Houſes. Now how this could be effected, but by an unuſual preſ-

ſure

ſure upon the Superficies of the Ocean, I cannot well conceive. In like manner that the Divine Providence might at the time of the Deluge ſo order and diſpoſe ſecond Cauſes, as to make ſo ſtrong a preſſure upon the face of the Waters, as to force them up to a height ſufficient to overflow the Earth, is no way unreaſonable to believe.

Theſe *Hypotheſes* I propoſe, as ſeeming to me at preſent moſt facile and conſonant to Scripture, without any concern for either of them; and therefore am not ſolicitous to gather together, and heap up Arguments to confirm them, or to anſwer Objections that may be made againſt them, being as ready to relinquiſh them upon better information, as I was to admit and entertain them.

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CHAP.

## CHAP. III.

### *Of the Effects of the Deluge.*

I Come now to the Third Particular propoſed, that is, To Enquire concerning the Conſequents of the Deluge, What conſiderable Effects it had upon the Earth and and its Inhabitants.

It had doubtleſs very great, in changing the *Superficies* of the dry Land: In ſome places adding to the Sea; in ſome taking from it; making Iſlands of *Peninſulæ*, and joining others to the Continent; altering the Beds of Rivers, throwing up leſſer Hills, and waſhing away others, *&c.* The moſt remarkable Effects it's likely were in the skirts of the Continents; becauſe the Motion of the Water was there moſt violent. *Athanaſius Kircher* * gives us a Map and Deſcription of the World after the Flood, ſhewing what Changes were made therein by it, or upon occaſion of it afterward, as he fanſies or conjectures. But becauſe I do not love to trouble the Reader with uncertain Conjectures, I ſhall content my ſelf to have ſaid in

* *De Arca Noæ. p.* 192

in general, that it may rationally be ſuppoſed, there were then great Mutations and Alterations made in the ſuperficial part of the Earth: but what they were, though we may gueſs, yet can we have no certain knowledge of: and for Particulars, refer the Curious to him.

One malignant effect it had upon Mankind, and probably upon other Animals too, in ſhortning their Age, or the duration of their lives; which I have touched before, and ſhewn, that this diminution of Age, is to be attributed either to the change of the Temperature of the Air, as to Salubrity, or Equality, (ſudden and frequent changes of Weather having a very bad influence upon the Age of Man in abbreviating of it, as I could eaſily prove) or elſe to the deteriority of the Diet; or to both theſe Cauſes. But how the Flood ſhould induce or occaſion ſuch a change in the Air and productions of the Earth, I do not comprehend.

CHAP.

## CHAP. IV.

### *Of formed Stones, Sea-ſhells, and other Marine-like Bodies found at great diſtances from the Shores, ſuppoſed to have been brought in by the Deluge.*

ANother ſuppoſed Effect of the Flood, was a bringing up out of the Sea, and ſcattering all the Earth over an innumerable multitude of Shells and Shell-fiſh; there being of theſe ſhell-like Bodies, not only on lower Grounds and Hillocks, but upon the higheſt Mountains, the *Appennine* and *Alps* themſelves. A ſuppoſed Effect, I ſay, becauſe it is not yet agreed among the Learned, whether theſe Bodies, formerly called *petrified Shells*, but now a-days paſſing by the name of *formed Stones*, be original Productions of Nature, formed in imitation of the Shells of Fiſhes; or the real Shells themſelves, either remaining ſtill entire and uncorrupt, or petrified and turned into Stone, or

or at leaſt, Stones caſt in ſome Animal Mold. Both parts have ſtrong Arguments and Patrons. I ſhall not balance Authorities, but only conſider and weigh Arguments.

Thoſe for the latter part, wherewith I ſhall begin, are,

Firſt, Becauſe it ſeems contrary to that great Wiſdom of Nature, which is obſervable in all its Works and Productions, to deſign every thing to a determinate end, and for the attaining that end, make uſe of ſuch ways, as are moſt agreeable to Man's reaſon, that theſe prettily ſhaped Bodies, ſhould have all thoſe curious Figures and Contrivances (which many of them are formed and adorned with) generated or wrought by a *Plaſtic Vertue*, for no higher end, than only to exhibite ſuch a form. This is Mr. *Hook*'s Argumentation. To which Dr. *Plot* anſwers, *That the end of ſuch Productions, is, to beautifie the World with thoſe Varieties; and that this is no more repugnant to the Prudence of* Nature, *than is the production of moſt* Flowers, Tulips, Anemones, *&c. of which we know as little uſe of, as of formed Stones.* But hereto we may reply, That Flowers are for the Ornament of a Body, that hath ſome degree of life in it: a Vegetative Soul, whereby it performs the actions of Nutrition, Auction and Generation; which

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it is reaſonable ſhould be ſo beautified. And, Secondly, Flowers ſerve to embrace and cheriſh the Fruit, while it is yet tender; and to defend it from the injuries of Sun and Weather; eſpecially for the protection and ſecurity of the *Apices*, which are no idle or uſeleſs part, but contain the Maſculine Sperm, and ſerve to give fecundity to the Seed. Thirdly, Though formed Stones may be uſeful to Man in Medicine, yet Flowers afford us abundantly more uſes, both in Meat and Medicine.

Yet I muſt not diſſemble, that there is a *Phænomenon* in Nature, which doth ſomewhat puzzle me to reconcile, with the prudence obſervable in all its works; and ſeems ſtrongly to prove, that Nature doth ſometimes *ludere*, and delineate Figures, for no other end, but for the Ornament of ſome Stones, and to entertain and gratifie our Curioſity, or exerciſe our Wits. That is, thoſe elegant Impreſſions of the Leaves of Plants upon *Cole-ſlate*, the knowledge whereof, I muſt confeſs my ſelf to owe to my Learned and Ingenious Friend Mr. *Edward Lloyd* of *Oxford*, who obſerved of it in ſome Cole-pits in the way from *Wycheſter* in *Gloceſterſhire* to *Briſtol*; and afterwards communicated to me a Sample of it. That which he found, was marked with the Leaves of two

or three kinds of *Ferns* and of *Harts-tongue*. He told me alſo, that Mr. *Woodward* a *Londoner*, ſhewed him very good Draughts of the common *female Fern*, naturally formed in Cole, which himſelf found in *Mendip* Hills; and added, That he had found in the ſame Pits, Draughts of the common *Cinquefoil*, *Clover graſs* and *Strawberries*. But theſe Figures are more diligently to be obſerved and conſidered.

Secondly, There are found in the Earth at great diſtance from the Sea, real Shells unpetrified and uncorrupted, of the exact Figure and Conſiſtency of the preſent natural Sea-ſhells, and in all their parts like them, and that not only in the lower Grounds and Hillocks near the Sea, but in Mountains of a conſiderable height, and diſtant from the Sea. *Chriſtianus Mentzelius* in his Diſcourſe concerning the *Bononian Phoſphorus*, gives us a Relation of many Beds of them found mingled with Sand in the upper part of a high Mountain not far from *Bologna* in *Italy*. His words are theſe, *Non procul monte Paterno dicto, lapidis Bononienſis patria, unico forte milliari Italico diſtanti (loci nomen excidit memoriâ) ingens mons imminet præruptus à violentia torrentium aquarum, quas imbres frequentes ex vicinis montibus confluentes efficiunt, atque inſignes terrarum moles ab iſto monte*

*monte proſternunt ac dejiciunt. In hac montis ruina, ſuperiore in parte viſuntur multæ ſtrages ſeriéſve, ex teſtis conchyliorum omnis generis, plurimâ arenâ interjectâ, inſtar ſtrati ſuper ſtratum (ut chymicorum vulgus loquitur.) Eſt enim inter haſce teſtarum conchyliorum ſtrages ſeriéſve arena ad craſſitiem ulnæ & ultra interpoſita. Erant autem teſtæ variorum conchyliorum, omnes ab invicem diſtinctæ, nec cuiquam lapidi impactæ, adeò ut ſeparatim omnia manibus tractari & dignoſci potuerint. Ejecerat hoc arena pura, nullo limo lutóve intermixta, quæ conchyliorum teſtas conſervaverat per multa ſecula integras. Interea verò diuturnitate temporis omnes illæ teſtæ erant in albiſſimam calcem facilè reſolubiles.* Not far from the Mountain called *Paterno*, where the *Bononian* Stone is gotten, about an *Italian* Mile diſtant, (the name of the place is ſlipt out of my memory) is a huge hanging Mountain, broken by the violence of the Torrents, cauſed by the confluence of Waters deſcending from the Neighbouring Mountains after frequent ſhowers, throwing down great heaps of Earth from it. In the upper part of this broken Mountain are ſeen many Beds or Floors of all kind of Sea-ſhells, much Sand interpoſing between Bed and Bed, after the manner of *ſtratum ſuper ſtratum*, or Layer upon Layer, as the Chymiſts phraſe

it. The Beds of Sand interceding between theſe Rows of Shells were a yard thick or more. Theſe Shells were all diſtinct or ſeparate one from another, and not ſtuck in any one ſtone, or cemented together, ſo that they might be ſingly and ſeparately viewed and handled with ones Hands. The Cauſe whereof was their being lodged in a pure Sand not intermixt with any Mud or Clay, which kept the Shells entire for many Ages. Yet were all theſe Shells, by reaſon of the length of time they had lain there, eaſily reſoluble into a purely white *Calx* or Aſh. *Fabius Columna* alſo obſerves, that in the tophaceous Hills and Cliffs about *Andria* in *Apulia*, there are found various ſorts of Sea-ſhells, both broken and whole, uncorrupt, and that have undergone no change. And *Ovid in Metam. lib.* 15.

*Et procul à pelago Conchæ jacuere marinæ.*

I am alſo informed by my learned and worthy Friend Dr. *Tancred Robinſon*, That Signior *Settali* ſhewed him in his *Muſeum* at *Milan*, many *Turbens*, *Echini*, *Pearl ſhells*, (one with a Pearl in it) *Pectunculi*, and ſeveral other perfect ſhells, which he himſelf found in the Mountains near *Genoa*; and afterwards my ſaid Friend took notice alſo of ſeveral

ſeveral Beds of them himſelf, as he paſſed over Mount *Cenis*, above fifty Leagues diſtant from the Sea; he aſſures me that many of the great Stones about the Buildings of *London* are full of ſhells, and pieces of them. Moreover, my fore-mentioned Friend Mr. *Lloyd* ſent me perfect *Eſcallop* and Sea-Urchin ſhells, exactly reſembling the like Sea-ſhells, both for figure, colour, weight and conſiſtency; which he himſelf gathered up near *Oxford*. And hath lately ſent me word, That he found at a place called *Rungewell-Hill* in *Surrey*, at a Village called *Hedley*, three Miles South of *Epſham*, at leaſt Twenty Miles diſtant from the Sea, ſome foſſil Oyſters, which by the confeſſion of Dr. *Lyſter* himſelf, were indeed true Oyſter-ſhells not petrified nor much decayed: Nay, ſo like they were to Oyſters newly taken out of the Sea, that a certain Perſon ſeeing of them, miſtook them for ſuch, and opened one of them, expecting to find a living fiſh therein. Now that Nature ſhould form real ſhells, without any deſign of covering an Animal, is indeed ſo contrary to that innate *Prolepſis* we have of the Prudence of Nature, (that is, the Author of Nature) that without doing ſome Violence to our Faculties, we can hardly prevail with our ſelves to believe it: and gives great coun-

tenance to the Atheiſts Aſſertion, That things were made or did exiſt by chance, without counſel or direction to any end.

Add hereto Thirdly, That there are other Bodies beſides ſhells found in the Earth, reſembling the Teeth and Bones of ſome Fiſhes, which are ſo manifeſtly the very things they are thought only to reſemble, that it might be eſteemed obſtinacy in any Man that hath viewed and conſidered them to deny it. Such are the *Gloſſopetræ* dug up in *Malta* in ſuch abundance, that you may buy them by meaſure, and not by tale: and alſo the Vertebres of Thornbacks and other Cartilagineous Fiſhes there found, and ſold for Stones among the *Gloſſopetræ*, which have no greater diſſimilitude to the Teeth of a living *Shark*, and Vertebres of a *Thornback*, then lying ſo long in the Earth, as they muſt needs have done, will neceſſarily induce. Mr. *Doody* has in his cuſtody a petrify'd lump of Fiſhes, on ſome of which the Scales themſelves ſtill remain. And if the very inſpection of theſe Bodies, is not enough to convince any Man, that they are no Stones, but real Teeth and Bones, *Fabius Columna* proves it by ſeveral ſtrong Arguments. 1. Thoſe things which have a woody, bony or fleſhy nature, by burning are changed firſt into a Coal, before they go into a *Calx* or

or Aſhes: but thoſe which are of a tophaceous or ſtony ſubſtance, go not firſt into a Coal, but burn immediately into a *Calx* or Lime, unleſs by ſome vitreous or metallick mixture they be melted. Now theſe Teeth being burnt, paſs preſently into a Coal, but the tophous ſubſtance adhering to them, doth not ſo; whence it is clear, that they are of an oſſeous, and no ſtony nature.

Next he ſhews, That they do not ſhoot into this form after the manner of Salts or Cryſtal, which I ſhall have occaſion further to treat of by and by. Then he proves it from the Axiom, *Natura nihil facit fruſtra*; Nature makes nothing in vain. But theſe Teeth, were they thus formed in the Earth, would be in vain; for they could not have any uſe of Teeth; as neither the Bones of ſupporting any Animal. Nature never made Teeth without a Jaw, nor ſhells without an Animal Inhabitant, nor ſingle Bones, no not in their own proper Element, much leſs in a ſtrange one. Further he argues, from the difficulty or impoſſibility of the Generation of *Gloſſopetræ* in ſuch places; becauſe, among *Tophi* and Stones in thoſe dry places, there could not be found matter fit for to make them of. But granting that, he queries whether they were generated at firſt all of a ſudden, or grew by little and little from

ſmall to great,as Animals Teeth, whoſe form they imitate, do. If the firſt be ſaid, he demands, Whether the *Tophus*, out of which they were extracted, were generated before or after the Teeth were perfected? If it be ſaid before, he asks, Whether there were a place in it of the figure and magnitude of the Tooth,or did the Tooth make it ſelf a place? If the *Tophus* were concrete before,and without a cavity, the vegetative power of the Stone now in birth,could not by force make it ſelf a place in the hard and ſolid *Tophus*; or if it could and did,the *Tophus* muſt needs be rent. Againſt the production of theſe Bodies in a compact Earth or Stone, *Nic. Steno* argues thus; Things that grow, expanding themſelves leiſurely or ſlowly, may indeed lift up great weights, and dilate the chinks and veins of Stones, as we ſee the Roots of Trees ſometimes do; but yet while they do thus make room for themſelves, they cannot but be often hindred by the reſiſtance of ſome hard obſtacle they meet with, as it happens to the Roots of Plants, which in hard Earth, being a thouſand ways writhen and compreſſed, recede from the figure, which otherwiſe in ſoft Land they are wont to retain: whereas theſe Bodies, whereof we are now diſcourſing, are all like one another, whether they be dug out

out of ſoft Earth, or cut out of Stones, or pluckt off Animals. Wherefore they ſeem not to be at this day produced in thoſe places where they are found, becauſe (as we have ſaid) thoſe things which grow in compact places are found ſtrangely miſhapen and irregular, which theſe are not: nor was the Earth compacted when they were there produced for the ſame reaſon. *Columna* proceeds, If there were a place before ready made in the *Tophus*, then was not that figure excavated in the *Tophus* by the vegetative nature of the Tooth it ſelf; but the *Tophus* by its own nature and precedent cavity, gave the form to the Tooth. If the latter part be choſen, and it be ſaid, that the Stone by its vegetative power grew by degrees; it may be anſwered as before, that could not be; becauſe the hardneſs of the *Tophus* could not have yielded to the vegetative force of the Tooth, but would rather have been rent or divided by it; or rather the *Tophus* it ſelf muſt have vegetated, containing a cavity or *uterus* of the ſhape of the Tooth, into which an oſſeous humour, penetrating through the Pores, and filling the cavity of the *Uterus*, muſt there have coagulated, and taken the form thereof, as is obſerved in Stones that have their original from a *Fluor*. That both Tooth and Caſe might vegetate together

together he denies, becauſe in all the Teeth which he had ſeen, the *Baſis* or Root was found broken, and that not with an uniform fracture, but different in every one. Which Argument is not to be ſlighted, for that it ſhews or proves, that there was no vegetation in the caſe; becauſe in all other figured Foſſils it is obſerved, that they are never found mutilous, broken or imperfect. Neither can it reaſonably be ſaid or believed, that theſe Roots or Teeth were by ſome chance broken within the *Tophi*, but rather, that when they were caſually overwhelmed and buried in that tophous Earth, they were broken off from the Jaws of the Animal in thoſe volutations, and ſo in that manner mutilated. Againſt the generation of theſe and the like Bodies in any hard Earth or Stone, *N. Steno* argues thus, That they are not at preſent produced in hard Earth, one may thence conjecture, that in all the parts of ſuch Earth or Stone throughout, they are all found of the ſame conſiſtence, and encompaſſed round on all ſides with that hard matter. For if there were ſome of them produced anew at this preſent day, the containing or ambient Bodies ought to give way to them while they are growing, which they cannot; and the Bodies themſelves that are now produced, would without doubt diſcover

ver ſomething wherein they differed from thoſe that were generated of old. Another Argument to prove them to be true Teeth and no Stones, he brings from their various parts and figures, which muſt elſe have been ſo wrought and formed in vain. The Tooth being not one homogeneous Body, but compounded of parts of a different conſtitution, there muſt in the formation of it be made a various election of humors, one for the root, one for the inner part, one for the Superficies of it. Then for the Figures, Magnitude, Situation or Poſture, and fitting of them; ſome are great, and broad, and almoſt triangular; others narrower and ſmaller, others very ſmall and narrow, of a pyramidal figure, ſome ſtreight, ſome crooked, bending downwards, or toward the neither ſide; ſome inclining toward the left, others toward the right ſide: ſome ſerrate with ſmall Teeth, others with great Indentures (which is obſerved in the leſſer triangular ones) ſome ſmooth without any Teeth, as the narrow pyramidal ones. All which things are obſerved in *Shark*'s Teeth, not only by the Learned Naturaliſts, but alſo by Fiſher-men and Mariners. The firſt row of Teeth in theſe Animals hanging out of the Mouth, bend forward and downward; the ſecond row are ſtreight, eſpecially toward the ſides of the Mouth, where they

they are triangular and broad, the other rows bend downward toward the inner part of the Mouth. Thus far * *Columna.*

* *Diſſert. De Glaſſopetra.*

Fourthly, If theſe formed Stones be indeed original Productions of Nature, in imitations of Shells and Bones, how comes it to paſs, that there ſhould be none found, that reſemble any other natural Body, but the Shells and Bones of Fiſhes only? Why ſhould not Nature as well imitate the Horns, Hoofs, Teeth, or Bones of Land Animals, or the Fruits, Nuts, and Seed of Plants? Now my learned Friend Mr. *Edward Lloyd* above mentioned, who hath been moſt diligent in collecting, and curious in obſerving theſe Bodies of any Man I know, or ever heard of, tells me, That he never found himſelf, or had ſeen in any Cabinet, or Collection, any one ſtone that he could compare to any part of a Land Animal. As for ſuch that do not reſemble any part of a Fiſh, they are either Rock Plants, as the *Aſtroites*, *Aſteriæ trochites*, &c. or do ſhoot into that form, after the manner of Salts and Fluors, as the *Belemnites* and *Selenites.*

Fifthly, Thoſe that deny theſe Bodies to have been the Shells and Bones of Fiſhes, have given us no ſatisfactory account of the manner of their Production. For that they do not ſhoot into that form after the manner

ner of Salts, may be proved by many Arguments. Firſt, All Salts that ſhoot, their Cryſtals or Concretions are of one uniform ſubſtance, and their Figures are more ſimple, and may be owing to the Figure of the Principles whereof they are compounded. In other Bodies that ſhoot, as the *Pyrites* and *Belemnites*, one may obſerve ſtreight *Radii* or Fibres proceeding from one Center. Secondly, Did thoſe Bodies ſhoot into theſe Figures after the manner of Salts, it ſeems ſtrange to me, that two ſhells ſhould be ſo adapted together at the heel, as to ſhoot out to the ſame extenſion round, and the upper and nether Valve be of different Figure, as in natural ſhells. Thirdly, Were theſe Bodies produced in the manner of ſaline Concretions, it's ſtrange there ſhould be ſuch varieties of them, and their ſhapes ſo regular, and exactly circumſcribed: ſo great a diverſity of Figures, arguing a greater variety of Salts, or of their modifications and mixtures, than are likely to be found in Nature; and the Concretions of Salts never, that I have yet ſeen, appearing in that regularity of Figure and due Circumſcription, as in theſe Bodies. This Argument *Steno* in his Diſcourſe concerning theſe Bodies, improves and urges thus; Who can deny, that the hexaedrical Figure of Cryſtal, the Cubes

of

of Marcaſites, and the Cryſtals of Salts in Chymical Operations, and infinite other Bodies coagulating and cryſtallizing in a fluid, have Figures much more ordinate than are thoſe of *Scallops*, *Cockles*, and other Bivalves, and alſo *Periwinckles* and *Turbens*? yet we ſee in theſe ſimple Bodies ſometimes the top of a ſolid Angle cut off; ſometimes many of them without any order ſticking one to another; ſometimes their Planes differing among themſelves in magnitude and ſituation; and many other ways receding from their uſual Figure? Which being ſo, how much greater and more notable defects muſt there needs have been in Bodies that have a far more compound Figure, ſuch as are thoſe which imitate the forms of Animals, if they were in like manner generated? Seeing therefore in theſe Bodies, which are very much compounded, theſe defects do ſeldom occur, which in thoſe other moſt ſimple Bodies are very frequent; ſeeing there are no defects obſerved in theſe compound Bodies, the like whereto are not in like manner ſeen in the Bodies of Animals. And ſeeing that whereſoever they are found they are exceeding like both among themſelves, and to the parts of Animals, it is very unlikely they ſhould ſhoot into thoſe Figures after the manner of Salts; but on the contrary, highly probable that

that they were originally the parts of Animals; the ſimilitude of conformation in their Pores, *Striæ*, Hinges, Teeth, Prominences, Threds, &c. almoſt neceſſarily inferring a ſimilitude of Original: which is an Argument of the Government of ſome Principle, ſuperiour to Matter figured and moved, in their Formations.

Fourthly, Were theſe Bodies nothing but Concretions of Salts, or ſaline mixtures, it ſeems no leſs ſtrange, that ſo many Liquors impregnated with all ſorts of Salts and Mineral Juices, in all proportions, having been at one time or other induſtriouſly or accidentally expoſed to cryſtallize, and let ſtand long in Veſſels, there ſhould never have been found in them any ſuch Concretions. For if any had happened, we ſhould doubtleſs have heard of them, and the Obſervers would have improved ſuch an Experiment to the Production of the like Bodies at their pleaſure. So I have finiſhed what I have to alledge in defence of the latter part, That theſe formed Stones were ſometimes the real Shells or Bones of Fiſhes, I mean the figured part of them.

I proceed now to ſet down, what may be objected againſt this Opinion, or offered in aſſertion of the contrary, *viz.* That theſe Bodies are primitive Productions of Nature,

ture, in imitation of the Shells and Bones of Fiſhes.

Againſt the former Opinion we have been pleading for, it may be objected, That there follow ſuch ſtrange and ſeemingly abſurd Conſequences from it, as are hardly reconcileable to Scripture, or indeed to ſober Reaſon: as,

Firſt, That the Waters muſt have covered the whole Earth, even the higheſt Mountains, and that for a long time, there being found of theſe Shells, not only in the moſt mountainous parts of our Country, but in the higheſt Mountains in *Europe*, the *Appennine* and *Alps* themſelves, and that not only ſcattered, but amaſſed in great lumps, and lying thick in Beds of Sand, as we have before ſhewn. Now this could hardly be the effect of a ſhort Deluge, which if it had carried any Shell-fiſh ſo high, would in all likelyhood have ſcattered them very thin. Theſe Beds and Lumps of them neceſſarily inferring, that they muſt have bred there, which is a work of time.

Now the general Deluge laſted in the whole, but ten Months; and it's not likely the Tops of the Mountains were covered half that time. Neither is it leſs repugnant to Reaſon than Scripture; for if the Waters ſtood ſo high above the Earth, for ſo long a time,

time, they muſt by reaſon of their Confluence, be raiſed as high above the Sea too. But what is now become of this huge Maſs of Waters, equal to ſix or ſeven Oceans? May not the Stoicks here ſet in, and help us out at a dead lift? The Sun and Moon, ſay they, might poſſibly ſup it all up. Yea, but we cannot allow time enough for that; for according to the moderate Draughts they take now a-days, one Ocean would ſuffice to water them many Ages, unleſs perchance when they were young and hot, they might need more drink. But to be ſerious, I have no way to anſwer this Objection, but by denying, that there are any Beds or great Lumps and Maſſes of theſe formed Stones to be found near the Tops of the *Alps*, or other high Mountains; but yet there might be ſome particular Shells ſcattered there by the general Deluge. Unleſs we ſhould ſay, that thoſe Mountains where ſuch Shells are found were anciently depreſſed places, and afterward raiſed up by Earthquakes. Another thing there is as difficult to give an account of, as of the Shells getting up to the Tops of Mountains: that is, of thoſe ſeveral Beds or Floors of Earth and Sand, *&c.* one above another, which are obſerved in broken Mountains. For one cannot eaſily imagine, whence theſe Floors or Beds in the manner of *ſtrata*

*ſuper ſtrata* (as the Chymiſts ſpeak) ſhould come, but from the Sediments of great Floods, which how or whence, they could bring ſo great a quantity of Earth down, when there was but little Land above the Sea, I cannot ſee. And one would likewiſe be apt to think, that ſuch a Bed of Sands, with plenty of Cockle-ſhells intermixt, as we mentioned before in the Mountain near *Bononia* in *Italy*, muſt have been ſometimes the bottom of the Sea. But before one can give a right judgment of theſe things, one muſt view the Mountains where ſuch Layers and Beds of Earth and Shells are found: for perchance they may not be elevated ſo high above the preſent Surface of the Sea, as one would judge by the deſcriptions of them. *'Tis true* (ſays my worthy Friend Dr. *Tancred Robinſon*) *that ſome Shells might have been ſcatter'd up and down the Earth by incampments of Armies, by the inhabitants of Cities and Towns, whereof there are now no remains. Mounſieur* Loubere, *the late* French *Envoy to* Siam, *affirms that the Monkeys and Apes at the* Cape of Good Hope, *are almoſt continually carrying Shells and other Marine Bodies from the Sea-ſide up to the Mountains; yet this will not ſolve the matter, nor give any ſatisfactory account, why theſe perfect ſhells are diſperſt up and down the Earth, in all Climates*

*mates and Regions, in the deep Bowels of vaſt Mountains where they lye as regularly in Beds as they do at the bottom of the Sea.*

Secondly, It would hence follow, That many ſpecies of Shell fiſh are loſt out of the World, which Philoſophers hitherto have been unwilling to admit, eſteeming the deſtruction of any one Species a diſmembring of the Univerſe, and rendring it imperfect: whereas they think the Divine Providence is eſpecially concerned to ſecure and preſerve the Works of the Creation: and that it is ſo, appears, in that it was ſo careful to lodge all Land-Animals in the Ark at the time of the general Deluge. The Conſequence is proved in that, among theſe petrified Shells, there are many ſorts obſerved, which are not at this day, that we know of, any where to be found. Such are a whole *genus* of *Cornua Ammonis*, which ſome have ſuppoſed to be *Nautili*, though to me they do not ſeem ſo to be, but a different *Genus* by themſelves, of which there have not any been ſeen either caſt aſhore, or raked out of the Sea, at any time, that ever I heard of. Nay, my very Learned and Honoured Friend Dr. *Liſter* proceeds further, and ſaith, That when he particularly examined ſome of our *Engliſh* ſhores for Shells, and alſo the freſh Waters and the Fields, that he did never meet with

any one of thoſe *Species* of Shells found at *Adderton* in *Yorkſhire*, *Wansford-Bridge* in *Northamptonſhire*, and about *Gunthorp* and *Beavoir* Caſtle, *&c.* any where elſe, but in their reſpective Quarries. What can we ſay to this? Why it is poſſible that many ſorts of Shell-fiſh may be lodged ſo deep in the Seas, or on Rocks ſo remote from the ſhores, that they may never come to our ſight.

Thirdly, It follows alſo, That there have been Shell-fiſh in theſe cold Northern Seas of greater bulk and dimenſions, than any now living; I do not ſay in theſe, but in the moſt Southernly and *Indian*; viz. *Cornua Ammonis* of two foot diameter, and of thickneſs anſwerable.

To this I anſwer, That there are no petrified Shells that do in bigneſs much exceed thoſe of the natural Shell-fiſh found in our Seas, ſave the *Cornua Ammonis* only, which I ſuſpect to have never been, nor had any relation to any ſhells of Fiſhes: or to imitate or reſemble them, at leaſt ſome of them. Againſt this Aſſertion it may be objected, That there are found in *England* may *Pectinites* bigger than any Shell-fiſh of that kind which our Seas now afford. And that there are no *Nautili*, or other teſtaceous Fiſhes with us, comparable in bigneſs to that *Nautilus*-ſhell of twenty eight pound found by Mr.

Mr. *Waller* at *Keinſham*. To which I anſwer, That there may be Shell-fiſh in our Seas, that do not at all, or very ſeldom appear, greater than we are aware of. I my ſelf, in company with Mr. *Willughby*, in the Streight between the *Iſle* and *Calf* of *Man*, took up among the tall *Fuci* growing thick upon the Rocks there, two or three of thoſe large *Echini Marini* or *Sea-Urchins*, as big as a Man's two fiſts, the ſhells whereof we never found caſt up upon the ſhores of *England*, nor ever heard that any Man elſe did. So that I queſtion not but there are lodged among the Rocks, and in the deeper places of the Sea, remote from the ſhores, many different ſorts of Shell-fiſh, and excelling in magnitude thoſe that are commonly found or known. And like enough it is, that after the Flood there were many places deſerted, and thrown up by the Sea, and become dry Land, which had been Sea before; which muſt needs be replete with theſe Bodies. As for the *Nautili*, they are much different from theſe *Cornua Ammonis*. For the *Nautili*, at leaſt all the Species of them known to us, are (as Dr. *Plot* well obſerves) extravagantly broad at the mouth, and have not more than two other ſmall turns at the moſt, whereas the turns of the *Ophiomorphites* are proportionable one to another;

and in number many times four or five, and ſometimes ſix, if we may believe *Aldrovand.* And there are *Nautili lapidei*, which do as nearly reſemble the *Nautilus* ſhells as any other *Coꝛhlites* do their reſpective Prototypes, as Mr. *Lloyd* aſſures me he had obſerved many in *Muſeums*. And the Learned and Ingenious Mr. *Richard Waller* then Secretary to the *Royal Society*, in a Letter to me dated *Febr.* 4. 87. writes, That he had been lately at *Keinſham* in *Somerſetſhire*, and making a ſearch after the *Cornua Ammonis*, found one of the true *Nautilus* ſhape, covered in ſome places with a ſhelly Incruſtation with the Diaphragms to be ſeen to the Center of the *Volutæ*, and in each Diaphragm, the hole by which they communicate one with another, by a ſtring or gut in the Fiſh. This was of a very hard Stone and large ſize, weighing at leaſt twenty eight pound, though ſome part was broken off. Another Argument that they have no relation to the common *Nautili*, is, that they break into pieces ſomewhat reſembling Vertebres, as I was firſt adviſed by the fore-remembred Mr. *Lloyd*, and have ſince noted my ſelf. I alſo received from that very Ingenious and Inquiſitive Gentleman, happy in making natural Diſcoveries, Mr. *William Cole* of *Briſtol*, ſuch an account of a ſort or two of theſe

*Ophi-*

*Ophiomorphous* Bodies, as is enough to ſtagger any Man's belief, if not utterly to overthrow his Opinion of their owing their original to any Sea-ſhell; which take in his words. *Among others of this kind of Bodies which I have obſerved, I ſhall inſtance in one, which can be reduced to none but the* Ophiomorphites, *which I found growing between the thin Plates of a kind of brittle blew Slate in large Rocks, ſome a furlong within the full Sea-mark, and in ſome where the Water comes not at higheſt Tides, only in great Storms, when the Waves break, it is daſht ſometimes againſt them, being forced up by the Winds; which being broken with a convenient Tool, will ſhiver all into very thin Plates; between which I have found in abundance of thoſe Stones, but as brittle as the Slate in which they grew, and of the ſame conſiſtence; but ſo thin, that the broadeſt, being about four Inches, are not ſo thick as a Half-Crown Piece, ſome not half an Inch broad, were as thin as a Groat, and ſo proportionably up to the largeſt, covered with a Superficies as thin, and exactly of the colour of Silver foil: and where the Sea-water waſheth them, and they are expoſed to the Sun and Wind when the Tide is gone, they are tarniſhed, and appear of a Gold, Purple, Blew and Red; as any thing on which Silver foil is laid, being expoſed a conſiderable time to the Sun,*

*Wind and Weather, will do. Theſe have the ſame ſpiral Figures, and as regular as the other Serpent-ſtones, and being taken off with a Knife, leave the ſame Impreſſions on both ſides of the Slate.*

*In ſome ſuch Rocks of Slate, but much harder, I found ſome of thoſe Stones of another kind, thick in proportion to their breadth, from an Inch to twenty eight Inches broad; the broadeſt one was at the great end (on which ſome Authors have fabulouſly reported the Head to grow) ſix Inches thick: all of them covered over with a white ſcale, which will be taken off, one coat under another, as Pearls or the ſhells of ſome Fiſhes. I ſaw ſome impreſſions as big as the Fore-wheel of a Chariot*, &c. What ſhall we ſay to this? Were there ever any Shell-fiſh in ours, or other Seas, as broad as a Coach-wheel? others as thin as a Groat? What is become of all this kind of *Ophiomorphite* Shell-fiſh? And yet (which is ſtrange) both theſe kinds by Mr. *Cole*'s deſcription, ſeem to have been covered with ſhells.

By what I have ſaid concerning theſe *Ophiomorphous* ſtones not to have been *Nautili*, I would not be thought to reflect upon, or detract from the Veracity or Exactneſs of the Obſervations of Mr. *Robert Hook*, whom for his Learning and deep Inſight into the My-

Myſteries of Nature, I deſervedly honour. I queſtion not, but he found in the *Keinſham Ophiomorphites* perfect Diaphragms of a very diſtinct ſubſtance from that which filled the Cavities, and exactly of that kind which covered the out-ſide, being for the moſt part Whitiſh, or Mother of Pearl coloured. Mr. *Waller* fore-mentioned, atteſts the ſame, writing in his Letter to me of *Febr.* 4. 1687. that in the ordinary Snake ſtones there, the ſhelly Diaphragms were very viſible. In this reſpect they do reſemble *Nautili*; though for their Figure they are much different, and of a diſtinct *Genus*. I never broke any of the *Keinſham* ſtones; but of thoſe found about *Whitby* in *Yorkſhire* many; but could not obſerve in them any ſhell-like Diaphragms, only they broke into ſuch pieces as I mentioned before. And my dear and much honoured Friend Dr. *Tancred Robinſon* writes me, That he had broken ſeveral *Cornua Ammonis*, but could never find any Diaphragms or Valves in them, though he confeſſeth Mr. *Woodward* ſhew'd him one with ſuch in his curious Collection of Petrifactions. So that theſe Diaphragms are not to be found in all the ſorts of them. But if they be found in ſome, it is a ſtrong preſumption, that they were at firſt in all, however they came to diſappear.

In

In fine, theſe *Ophiomorphous* Stones do more puzzle and confound me, than any other of the formed Stones whatſoever, becauſe by Mr. *Hook*'s Deſcription of thoſe of *Keinſham*, they ſeem to have been, or to owe their original to ſhells; and yet there is nothing like them appears at this day in our or any other Seas, as far as I have ſeen, heard, or read.

Thirdly, A ſecond Argument to prove theſe formed Stones never to have been Shells, Dr. * *Plot* affords us, Becauſe that even thoſe Shells, which ſo exactly repreſent ſome ſorts of Shell-fiſh, that there can be no exception upon the account of Figure, but that they might formerly have been Shells indeed, at ſome places are found only with one ſhell and not the other. Thus in *Cowley* Common [in *Oxfordſhire*] we meet only with the gibbous, non the flat ſhell of the petrified *Oyſter*, and ſo of the *Eſcallop-ſtones* in the Quarries near *Shotover*: which if they had once been the ſhells of *Oyſters* and *Eſcallops*, had ſcarce been thus parted. To this I anſwer, That this Argument is not neceſſarily concluſive; becauſe there may poſſibly be ſome reaſon of it, though we know it not, nor can eaſily imagine any. The like Anſwer may be returned to his next Argument.

* *Hiſt. Nat. Oxf.* p. 117.

Thirdly,

Thirdly, Becauſe (ſaith the Doctor) I can by no means ſatisfie my ſelf, how it ſhould come to paſs, that in caſe theſe Bodies had once been moulded in Shells, ſome of the ſame kind ſhould be found in Beds, as the *Conchites* at *Langley*, *Charlton*, *Adderbury*; and others ſcattered, as at *Glympton*, and *Teynton*, and ſo the *Oſtracites* at *Shotover* and *Cowley*. Nor how it ſhould fall out, that ſome of theſe *Bivalves* ſhould always be found with their ſhells ſeparate, as the *Oſtracites* and *Pectines*: and others always cloſed together, as the *Conchites* in all places I have yet ſeen.

Fourthly, Becauſe many of theſe formed Stones ſeem now to be *in fieri*, (which is the Doctor's next Argument) as the *Selenites* at *Shotover* and *Hampton-gay*, the *Conchites* of *Glympton* and *Cornwell*, many of which were of a perfect Clay, and others of Stone, &c. As for the *Selenites*, I grant them to have been *in fieri*, becauſe they are formed after the manner of Salts by ſhooting or cryſtallization; but concerning the Clay Cockles, I ſay with the Civilians, *ampliandum*. Since the publiſhing of this Treatiſe, happening to read Dr. *Nicol. Steno*'s Diſcourſe concerning theſe Bodies, in his *Deſcription* of a *Sharks-head*, I met with a very plauſible Solution of this Argument or Objection. Firſt he gives

us

us the Hiſtory of theſe Bodies, or his Obſervations concerning them; of which theſe following are two, 1. That in *Argilla*, which ſome engliſh *Potters Earth*, and we may render a Fat Clay, he had taken notice that there were plenty of them on the *Superficies* of the Earth, but within the Earth but a few. 2. That in the ſame *Argilla* the deeper you deſcend downward, the more tender thoſe Bodies are, ſo that ſome of them at any the leaſt touch fall into Powder: and they alſo that were on the *Superficies*, almoſt all of them were without much ado reduced into a white Powder. Now (ſaith he) ſeeing in ſuch kind of Earth, by how much deeper thoſe Bodies lye, by ſo much the ſofter they are, and do leſs bear the touch, the Earth is ſo far from producing them, that it doth rather deſtroy them. Neither is there any reaſon to think, that they are therefore ſofter, becauſe they are not yet arrived at their perfection, or come to maturity: for thoſe things that are ſoft upon that account, while they are in generating, have their parts united to one another as it were by a kind of Glue (as is ſeen in the tender ſhels of Pine-Nuts and Almonds) but theſe Bodies, being deprived and deſtitute of all Glue, eaſily moulder to Duſt. Nor is it any Objection againſt our Opinion, that on the ſurface of the Earth

their

their number ſeems to encreaſe, for that is owing to Rains waſhing away the intermediate Earth: but rather their conſiſtence when they are on the *Superficies*, being tender and eaſily crumbled into Duſt, doth demonſtrate, that their deſtruction begun in the Earth, was interrupted by the intervention of the Rain. But to give theſe Arguments their due, though they be not demonſtrative proofs, yet they infer a great degree of probability, and ſhrewdly urge and ſhake the contrary Opinion.

The other Arguments, the Doctor alledges, admit a plauſible ſolution, excepting ſuch as we have already touched, and given as good an anſwer to, as either the matter will admit, or we were able to give.

To the firſt, That there are found Stones reſembling Shell-fiſh that ſtick to Rocks: I anſwer, That many of them might by accident be rub'd off the Rocks they ſtick to, or thruſt off by Birds inſinuating their Bills between the Shell and Rock, to feed upon their meat; but by what means ſoever it be, that they are ſometimes broken off, the matter of fact is certain; for we find many *patellæ* caſt upon the ſhores by the working of the Sea; Why then might they not be brought up by the Flood?

To

To the ſecond, Why might not the Bones of Whales, Sea-horſes, all ſquamoſe Fiſhes, the great ſhells of the *Buccina*, *Murices*, *Conchæ Veneris*, and *Solenes*, and almoſt all the cruſtaceous kind, as *Crabs* and *Lobſters*, &c. as well have been brought up and left behind by the Flood, and afterward petrified, as any of the teſtaceous kind? I anſwer, Of the great *Buccina*, *Murices* and *Conchæ Veneris*, there are very few or none found in our Seas: It may be there are of them in the Mountains and Quarries of the *Indies*, were any Man ſo curious as to ſearch them out: Though it's likely but few, becauſe being great things, eaſie to be ſeen, and that part of the World having been fully peopled ſoon after the Flood, their beauty might invite the Inhabitants to ſearch them out, and gather them up. But ſecondly, Thoſe other kinds may poſſibly be leſs durable, and more apt to be wrought upon, to moulder, decay, and be diſſolved in time by the Weather, Rains and Moiſture of the Earth, or were not ſo ſuſceptive of petrifying Juices.

The Third Argument is already anſwered in the precedent Diſcourſe.

To the Fourth Argument as to what concerns the *Selenites*, *Aſtroites* and *Belemnites*, we have anſwered already. That the Species of *Brontiæ* cannot be the petrified Shells of

of *Echini Spatagi* the Arguments the Doctor alledges out of *Ariſtotle* and *Rondeletius* do not evince. For though in ſome Seas they may be πελάγιοι καὶ σπάνιοι, yet in others are they plentiful enough. In our own Seas at *Llandwyn* in the *Iſle of Angleſey*, we may reaſonably conjecture, they are more plentiful than the common *Echini* any where with us; becauſe we found more of their Shells caſt up there on the ſhore, than of the *Echini* in any ſhore about *England*: nay, ſo common are they there, that even the Vulgar have taken notice of them, and impoſed a Name upon them, calling them *Mermayds Heads*. And though their Briſtles or Prickles were but ſmall, yet were they not few or thin ſet, as *Rondeletius* ſaith.

How the Snake-ſtones about *Huntly-nab* and *Whitby* in *Yorkſhire* came to be included in Globular or Lenticular Stones, is not difficult to make out: for the Cliffs thereabout being Allum ſtone or Mine, wherein theſe Snake-ſtones lye; the Sea in Spring-tides and Tempeſtuous Weather undermines and throws down part of the Shore or Cliffs, which by the fall break in pieces, and the *Ophiomorphus* ſtone being harder than the reſt of the Cliff, is broken off from it by the fall, or its volutation in the Sea afterward, with ſome part of the Cliff or Allum-ſtone ſticking

ſticking to each ſide of it where it is concave, and by reaſon of its Figure and *Striæ*, cannot eaſily part from it.

Laſtly, To diſſemble nothing, I have my ſelf obſerved ſome Cockle-ſtones to have ſeemingly different impreſſions or *Striæ* upon the ſame *Superficies*; which *Phænomenon* it is very hard to give an account of. I have alſo obſerved a large Stone almoſt as hard as Marble, that was ſo marked every where throughout with the impreſſions of Cockles and their *Striæ*, ſo croſſing one another in every part of it, that if it were nothing but ſhells amaſſed together by a ſtony Cement; thoſe ſhells muſt have before their Concretion been broken into infinite ſmall pieces or fragments, ſcarce any remaining entire; which I do not ſee how any Floods or Working of the Sea, could poſſibly effect.

So I have finiſhed what I had to ſay concerning this ſuppoſed Effect of the *Deluge*, the bringing in of Shells, and ſcattering them all over the dry Land. But yet I muſt not diſmiſs this Particular, till I have ſaid ſomething to an Objection that preſently occurs to any one who conſiders this matter. The Waters of the Flood having been ſupplied partly by Rains, partly by the breaking up of the Fountains of the great Deep, and not by an Irruption or Inundation of the Sea, how

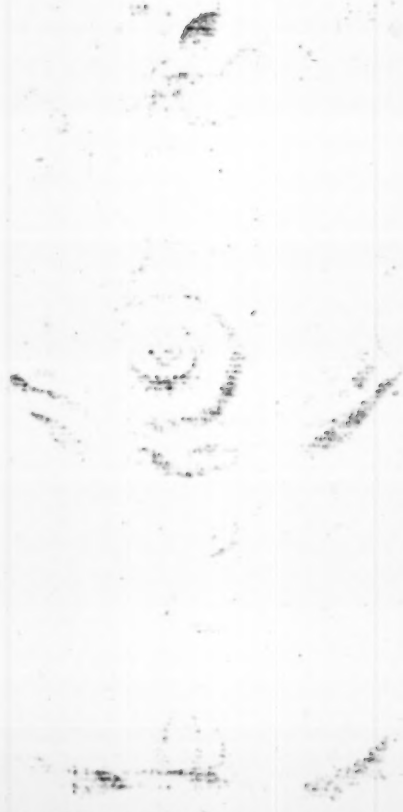
how could any Sea-ſhells at all be brought in by it?

To this I anſwer, That the great Deep communicates with the Sea; and the Waters riſing up out of the ſubterraneous Abyſs, the Sea muſt needs ſucceed, elſe would there have been an empty ſpace left in the middle of the Earth; ſo that the Shell-fiſh might as well come in this way from the bottom of the Sea, as by an Inundation: in like manner as the fiſh in the Lake of *Carniola*, called the *Zirchnitzer Sea*, do deſcend annually under ground through many great holes in the bottom, and return again by the ſame holes. To all this I might add, that into the Lands near the skirts of the Sea, and lower Hills, theſe ſhells might in part be brought by particular Floods, of which many we read of, and more poſſibly than are recorded in any Hiſtory may have happened ſince the general *Deluge*. Hence the chief Champions of the Opinion of *Mock-ſhells* are not difficult to grant, that in ſome Countries, and particularly along the ſhore of the *Mediterranean Sea*, there may all manner of ſhells be found promiſcuouſly included in the Rocks or Earth, and at good diſtances too from the Sea. Which are the words of Dr. *Liſter*, repeated and approved by Dr. *Plot*. But this will not ſerve their turn; for we have before proved, that in the

middle part, and near the Center of our own Country, at a great diſtance from the Sea, *viz.* in *Oxfordſhire*, there are found not only ſhell-like Stones, but real Shells, or Mock-ſhells (as ſome eſteem them) for Figure, Colour, Weight, Conſiſtency, or any other Accident not to be diſtinguiſhed from true ſhells; and that not ſuch as have been accidentally ſcattered there, but dig'd out of the Ground in plenty, and of Fiſhes that are rarely found in our Seas: Patterns whereof were ſent me by my Ingenious Friend Mr. *Lloyd*, who, I hope, will ere long gratifie the Curious, by publiſhing a general Catalogue of all the *formed Stones* found in *England*, and his Remarks upon them.

And I have likewiſe proved by good Authority, that beyond the Seas, in high Mountains, and many Leagues diſtant from the Sea too, there have been Beds of real ſhells. I might have added *Sharks*-teeth or *Gloſſopetræ*, as both *Goropius Becanus* and *Georgius Agricola* teſtifie; if not in Beds, yet plentifully diſperſt in the Earth. There are ſeveral Medical Hiſtories extant (as Dr. *Tancred Robinſon* informs me) of perfect ſhells found in Animal Bodies, in whoſe Glands they were originally formed, which is a conſiderable Objection, not eaſily to be removed.

CHAP.



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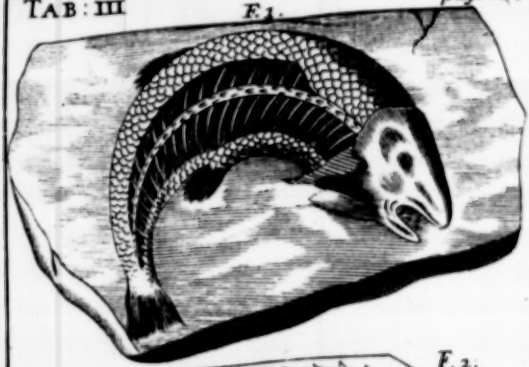
F. 2.

F.1.





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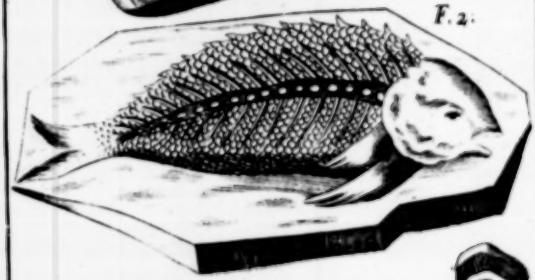
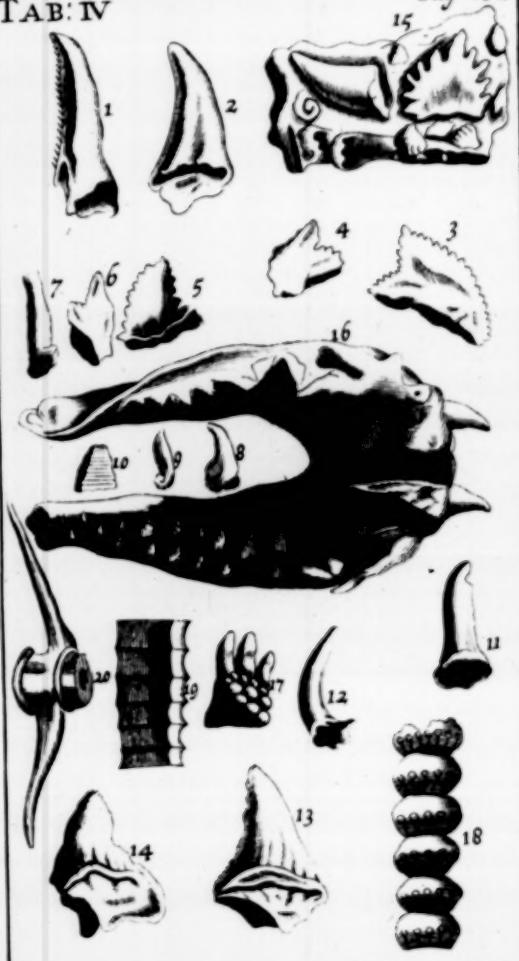


F.3.

# TAB: IV



## CHAP. V.

### *That there have been great Changes made in the Superficial Part of the Earth ſince the General Deluge, and by what Means.*

I Shall now Diſcourſe a little concerning ſuch Changes as have been made in the Superficial part of the Earth ſince the Univerſal Deluge, and of their Cauſes.

That there have been ſuch I think no ſober and intelligent Perſon can deny, there being ſo good Authority and Reaſon to prove it. *Plato* in his *Timæus* tells us, That the *Egyptian* Prieſts related to *Solon* the *Athenian* Law-giver, who lived about 600 years before our Saviour, that there was of old time without the Straits of *Gibraltar* a vaſt Iſland, bigger then *Africa* and *Aſia* together, called *Atlantis*, which was afterward by a violent Earthquake and mighty Flood, and Inundation of Water, in one day and night wholly overwhelmed and drown'd in the Sea. Whence it may be conjectured, that the Old

and New World were at firſt continuous, or by the Intervention of that Iſland not very far remote from each other.

That the Iſland of *Sicily* was of old broken off from *Italy* by the irruption or inſinuation of the Sea is generally believed, and there is ſome memorial thereof retained in the very name of the City *Rhegium*, ſtanding upon the *Fretum* that ſeparates *Italy* and *Sicily*, which ſignifies breaking off.

* *Ovid. Metam. lib.* 15.

—* *Zancle quoque juncta fuiſſe*
*Dicitur Italiæ, donec confinia pontus*
*Abſtulit, & mediâ tellurem reppulit undâ.*

In like manner the Iſland called *Eubœa* now *Negroponte*, was of old joyned to *Greece*, and broken off by the working of the Sea.

Moreover, the Inhabitants of *Ceylon* report that their Iſland was anciently joyned to the Main-land of *India*, and ſeparated from it by the force of the Sea.

It is alſo thought, and there is good ground for it, that the Iſland of *Sumatra* was anciently continuous with *Malacca*, and called the *Golden Cherſoneſe*: for being beheld from afar, it ſeems to be united to *Malacca*.

And to come nearer home, *Verſtegan* affirms, and not without good reaſon, that our Iſland

Iſland of *Great Britain*, was anciently Continent to *Gaule*, and ſo no Iſland but a *Peninſula*, and to have been broken off from the Continent, but by what means it is in his judgment altogether uncertain: whether by ſome great Earthquake, whereby the Sea firſt breaking through might afterward by little and little enlarge her paſſage; or whether it were cut by the labour of Man in regard of commodity by that paſſage: or whether the Inhabitants of one ſide, or the other, by occaſion of War did cut it, thereby to be ſequeſtred and freed from their Enemies.

His Arguments to prove that it was formerly united to *France*, are, 1. The Cliffs on either ſide the Sea, lying juſt oppoſite the one to the other, that is, thoſe of *Dover* to thoſe lying between *Callice* and *Bouloin*, (for from *Dover* to *Callice* is not the neareſt Land) being both of one Subſtance, that is, of Chalk and Flint. 2. The ſides of both towards the Sea plainly appearing to have been broken off from ſome more of the ſame ſtuff or matter, that it hath ſometime by Nature been faſtned to. 3. The length of the ſaid Cliffs along the Sea-ſhore being on one ſide anſwerable in effect to the length of the very like on the other ſide, that is, about ſix Miles. And 4. the nearneſs of Land between *England* and *France* in that place; the

diſtance between both, as ſome skilful Sailers report, not exceeding 24 *Engliſh* Miles.

Some of the Ancients, as *Strato*, quoted by *Strabo* in the firſt Book of his *Geography*, ſay, That the *Fretum Gaditanum* or Strait of *Gibraltar*, was forcibly broken open by the Sea. The ſame they affirm of the *Thracian Boſphorus* and *Helleſpont*, that the Rivers filling up the *Euxine* Sea, forced a paſſage that way, where there was none before. And in confirmation hereof, *Diodorus Siculus* in his Fifth Book gives us an Ancient Story current among the *Samothracians*, *viz.* That before any other Floods recorded in Hiſtories, there was a very great Deluge that overflowed a good part of the Coaſt of *Aſia*, and the lower Grounds of their Iſland, when the *Euxine* Sea firſt brake open the *Thracian Boſphorus* and *Helleſpont*, and drowned all the adjacent Countries.

This Traditional Story I look upon as very conſiderable for its Antiquity and Probability, it ſeeming to contain ſomething of truth. For it's not unlikely that the *Euxine* Sea, being over-charged with Waters by extraordinary Floods, or driven with violent ſtorms of Wind, might make its way through the *Boſphorus* and *Helleſpont*. But it will be objected, That the *Euxine* Sea doth empty it ſelf continually by the *Boſphorus* and *Helle-*

*Helleſpont* into the *Mediterranean*, and that if it had not this way of diſcharge (the Rivers bringing in more than is ſpent by vapour) it would ſoon overflow all its ſhores, and drown the circumjacent Countreys; and ſo it muſt have done ſoon after the Flood; and therefore it is not probable that *Samothrace* ſhould have been inhabited before that irruption, if any ſuch there were.

To which I anſwer, 1. That Monſieur *Marſilly* thinks he hath demonſtrated an under-current in the *Thracian Boſphorus*, by means of which the *Euxine* may receive as much Water from the *Mediterranean* as it pours forth into it. But becauſe I have already declared my ſelf not to be ſatisfied of the being and poſſibility of theſe under-currents, I anſwer, 2. The Annual receipts from the Rivers running into the *Euxine*, not very much exceeding what is ſpent in vapour, who knows but that from the time of the General Deluge till the Irruption whereof we are diſcourſing, the *Euxine* might yearly enlarge its Baſon, and encroach upon the Neighbouring Countreys?

Natural Hiſtorians give us an account of new Iſlands raiſed up in the Sea: *Plin. Hiſt. Nat. lib.* 2. *cap.* 87. *enumerates. Delos* and *Rhodes* Iſlands of note; and of leſs account and later emerſion *Anaphe* beyond *Melos*,

and *Nea* between *Lemnos* and the *Helleſpont*: *Alone* between *Lebedos* and *Teos*, and among the *Cyclades*, *Thera* and *Therasia*, *Olymp.* 135. *An.* 4. [which laſt, or one of the ſame name, *Seneca* ſaith was raiſed, himſelf beholding it, *nobis ſpectantibus enata:*] Among the ſame after 130 years *Hiera*, and two Furlongs diſtant in his own time, when *Junius Syllanus* and *L. Balbus* were Conſuls, *Thia*. But the moſt conſiderable and remarkable mutations that have been made in the Earth have been on the Sea-coaſts, either by carrying on the Land into the Sea, and atterrating the bottom of the Sea; or by drowning the Lands near the Sea, by Irruptions and Inundations thereof, or undermining or waſhing away the ſhores.

Of the firſt ſort of Change by Atterration, or making the Sea dry Land, we have an eminent Inſtance in the *Dutch Netherlands*, which, I eaſily conſent with *Verſtegan*, ſo far as they are even and plain without any Hills, have undoubtedly heretofore in time long paſt, been Sea; as appears 1. From the lowneſs of their ſituation, ſome of the more Maritime Parts of them, as *Zealand* and *Holland*, and part of *Flanders*, being ſo low, that by breach or cutting of the Sand Banks or Downs, which the Sea by little and little hath caſt up, and the labour of Man here and

and there ſupplied, might eaſily be drowned and converted into Sea again: and of the great harms that theſe Parts have heretofore by the Irruption of the Sea ſuſtained. But now not only thoſe low Places that adjoyn upon the Sea, as *Holland* and *Zealand*, but the greater part of *Flanders* and *Brabant*, though they lye not ſo low as they, but of ſuch height as no Inundation of the Sea can any whit annoy them, though the Sand-Banks and Downs on the Sea-ſide were never ſo much broken or cut through, yet are they as even and level as even *Holland* and *Zealand* themſelves, which is a ſufficient demonſtration, that they were once covered with Water. For that Water will thus level Ground, it often runs over, is clear from Meadows, and from the bottom of the Sea diſcovered at Low-water; and we have Experience of no other Cauſe that doth or can effect it. And therefore *Lewis Guicciardine* erroneouſly argues *Hubert Thomas* Secretary to Count *Frederick Palatine* of the *Rhine* of a Miſtake, for ſaying in his Deſcription of the Country of *Liege*, that the Sea hath come up even to *Tongres* Walls, now well nigh an hundred *Engliſh* Miles from the Sea: among other good Reaſons, alledging for the proof thereof, that the great Iron-rings are there yet remaining, unto

to which the Ships that there ſometimes arrived were faſtned. I ſay erroneouſly, ſeeing all the Countreys between that and the Sea are level, and of an equal *Superficies*, without any Hills or Riſings. 2. This appears not only from the great plainneſs and evenneſs of the Ground, but in that the Soil generally both in *Flanders* and *Brabant* is ſandy; whence it ſeems naturally to follow, that thoſe Countreys were anciently the Flats, Sands, or ſhores of the Sea. 3. In that digging about two Fathom more or leſs deep in the Earth innumerable ſhells of Sea-fiſh are found, and that commonly in all places both of Field and Town; and in many places the great Bones of Fiſhes.

Further (ſaith *Verſtegan*) it is to be noted, that albeit digging deep in the Earth in *Brabant* and *Flanders*, great abundance of ſhels and bones of Fiſhes are to be found; yet digging in the Earth in *Holland* and *Zealand*, none at all are perceived; howbeit on the Sands on the Sea-ſhore there are very many. The reaſon whereof may be becauſe thoſe parts have been in time long paſt part of the depth of the Sea: and the parts aforeſaid of *Brabant* and *Flanders* the flats or ſhore; and on the flats, and not in the depths, ſuch kind of Shell-fiſh are naturally nouriſhed. This is a very plauſible account.

But

But yet it hath been by experience found, that if you dig deep enough, even in *Holland* it ſelf, after many floors of ſeveral ſorts of Earth, you will at laſt come to Beds of ſhells. For *Varenius* tells us, that ſinking a Well in *Amſterdam*, after many beds or layers of Earth, Sand, Turf, &c. at an hundred foot depth they came to a bed of Sea-ſand mixt with Cockle-ſhells of four foot thickneſs, which doubtleſs was of old time the bottom of the Sea, and all the other beds above it were brought down partly by Floods ſubſiding and ſettling there, partly by the working of the Sea ſpreading beds of Sand upon the layers of the Earth, and ſo interchangeably. But from this Experiment it doth appear, that however deep the Sea were thereabouts, yet it was not too deep to breed or harbour ſhell-fiſh.

Another great inſtance of Change made in the *Superficies* of the Earth by atterration is in our own Country, the great level of the Fens running through *Holland* in *Lincolnſhire*, the *Iſle of Ely* in *Cambridgeſhire*, and *Marſhland* in *Norfolk*. Which that it was ſometime part of the Sea, and atterrated by Land brought down by Floods from the upper Grounds, ſeems to me evident, in that it is near the Sea, and in that there is thereabout a concurrence of many great Ri-

vers

vers which in Flood-times by the abundance of mud and ſilt they bring down there ſubſiding, have by degrees raiſed it up: and thirdly in that the whole Country is exactly level, like the bottom of the Sea; it being (as I have already ſaid) the nature of the Water flowing over the Earth in time to level and bring to a plain all places that are ſoft and yielding, and not rocky, as is ſeen in Meadows, and in the bottom of the Sea diſcovered at Low-water.

A third Inſtance is the *Craux* in *Provence* in *France*, anciently called *Campus Lapideus*, of which *Pliny* ſaith it was *Herculis prælio-rum memoria*; and *Strabo* out of *Æſchylus* gives us a Poetical Fable, that the ſtones were rained down by *Jupiter* in favour of *Hercules* when he wanted Darts, that he might caſt them at the *Ligurian* Army, and thereby break and ſcatter it. *Poſidonius* thinks it was once a Lake, which by fluctuation dried up; and ſo the ſtones came to be equally diſperſed over the bottom of it. That it was a very ancient thing, is clear, having its original in the fabulous times before any Memoirs of true Hiſtory: it continues to this day ſuch a kind of place as it was in *Strabo*'s time. It appears ſo evidently to any one who hath viewed and conſidered it, to have been once part of the Sea, from

from its being exactly level, and ſtrowed all over with ſtones, as I have obſerved the bottom of the Sea in many places to be, that there is not the leaſt reaſon to doubt of it.

The River *Arnus* in *Tuſcany* now falleth into the Sea ſix Miles below *Piſa*: whereby it appeareth, (ſaith Dr. *Hakewil*) that the Land hath gained much upon the Sea in that Coaſt, for that *Strabo* in his time reporteth, it was but twenty Furlongs (that is, but two Miles and an half) diſtant from the Sea.

I might to theſe add many other Inſtances of Atterrations out of *Strabo* in his firſt Book; as about the Outlets of *Iſter* the places called *Stethe* and the Deſerts of *Scythia*: about thoſe of *Phaſis* the Sea-coaſt of *Colchis*, which is ſandy, and low and ſoft. About *Thermodon* and *Iris* all *Themiſcyra*, the plain of the *Amazons*, and the moſt part of *Sidene*.

To omit the whole Land of *Egypt*, which probably was covered originally with the Sea, and raiſed up by the mud and ſilt brought down by the *Nile* in its Annual Floods ſubſiding there, as I ſhall have occaſion to ſhew afterwards.

Moreover, *Varenius* rationally conjectures that all *China*, or a great part of it, was originally thus raiſed up and atterrated, having been anciently covered with the Sea: for that

that

that great and impetuous River, called the Yellow or Saffron River, coming out of *Tartary*, and very often, though not at anniverſary ſeaſons, overflowing the Countrey of *China*, is ſaid to contain in it ſo much Earth and Sand, as make up a third part of its Waters. The evenneſs and level *Superficies* of this whole Country of *China* render this Conjecture the more probable.

In fine, the like Atterrations appear to have been made about the Mouths of *Indus* and *Ganges* in the *Eaſt-Indies*, and the River *de la Plata* in *America*: and the *Rhodanus* in *France*; and doubtleſs moſt other great Rivers throughout the whole World.

To all which if we add the ſpatious Plains that are on each ſide moſt great Rivers from their Mouths many Miles up their Channels, as may be obſerved in the *Thames* and *Trent* in *England*, which probably were at firſt *Sinuſes* of the Sea, landed up by Earth brought down from the Mountains and upper Grounds in times of Floods; it will appear that in this reſpect there hath been a very great Change made in the Terraqueous Globe, the dry Land much enlarged, and the Sea ſtraitned and cut ſhort.

But

But you will ſay, Hath there been no compenſation made for all this: Hath not the Sea other-where gained as much as it hath loſt about the Mouths of the Rivers? If not, then the Sea will in time be ſo far landed up, or ſtraitned till it be compelled to return again, and overflow the whole Earth.

To which I anſwer, That where the ſhores are Earthy or Argillaceous, or Gravelly, or made of any crumbling and friable matter, the Sea doth undermine and ſubvert them, and gain upon the Land; which I could prove by many Inſtances, ſome of which I ſhall afterward touch. But whether the Sea doth in theſe places gain proportionably to what it loſes in the fore-mentioned, according to the Vulgar Proverb, is to me ſomewhat queſtionable.

To proceed now to diſcourſe a little concerning the Changes that have been made by the Irruptions and Inundations of the Sea, or by its undermining and waſhing away the ſhores.

That there have been of old great Floods, and much Land laid under Water by Inundations of the Sea, is clear, many ſuch being recorded in Hiſtory.

The moſt ancient of all, next to the general Deluge in the days of *Noah*, *viz.* that of *Ogyges* King of *Bœotia*, or rather *Attica*, ſeems

ſeems to have been of this nature: So doth that of a great part of *Achaia* in *Peloponneſus*, wherein the Cities of *Bura* and *Helice* were overwhelmed and laid under Water.

*Cambden* out of *Gyraldus* reports, That anciently a great part of *Pembrokeſhire* ran out in the form of a Promontory towards *Ireland*; as appears by that Speech of King *William Rufus*, That he could eaſily with his Ships make a Bridge over the Sea, ſo that he might paſs on foot from thence to *Ireland*. This Tract of Ground being all buried in deep Sands during the Reign of King *Henry* the *Second*, was by the violence of a mighty ſtorm ſo far uncovered, that many ſtumps of great Trees appeared faſtned in the Earth: *Ictúſque ſecurium tanquam heſterni* (ſaith *Giraldus*) *and the ſtrokes of the Axes in them, as if they had been cut but yeſterday; ut non littus jam, ſed lucus eſſe videretur, mirandis rerum mutationibus*; ſo that now it made ſhew of a Wood rather than of a Strand; ſuch is the wonderful Change of all things.

In the time of King *Henry* the Firſt of *England* there happened a mighty Inundation in *Flanders*, whereby a great part of the Country was irrecoverably loſt, and many of the poor diſtreſſed People, being bereft of their Habitation, came into *England*; where the

the King in compaſſion of their Condition, and alſo conſidering that they might be beneficial to his Subjects, by inſtructing them in the Art of Clothing, firſt placed them about *Carliſle* in the North, and after removed them into *South-Wales*, where their Poſterity hath ever ſince remained.

In the Year 1446. there periſhed 10000 People by the breaking in of the Sea at *Dordrecht* in *Holland*, and thereabouts; and about *Dullart* in *Frieſland*, and in *Zealand*, above 100000 were loſt, and two or three hundred Villages drowned, ſome of their Steeples and Towers, when the Tide is out, ſtill appearing above water.

Mr. *Carew* of *Antony* in his *Survey of Cornwal*, affirmeth, That the Sea hath ravened from that Shire the whole County of *Lioneſs*. And that ſuch a County there was he very ſufficiently proves by many ſtrong Reaſons. *Camden* in his *Britannia* reports out of ancient Records, That upon the *Kentiſh* Coaſt, not far from *Thanet*, is a ſandy dangerous place, (which the Inhabitants call *Goodwyns Sands*) where an Iſland (being the Patrimony of Earl *Goodwyn*) was ſwallowed up in the Year 1097.

But the greateſt Change of this kind that ever was made (if it be true) was the ſubmerſion of the vaſt Iſland of *Atlantis*, whereof we have already ſpoken.

As for the Changes that have been made by undermining and waſhing away the ſhores, they have been partly the diminiſhing of the Land, and partly the raiſing up of ſeveral Iſlands not far from the ſhores. So the *Baltick* Sea hath invaded the ſhores of *Pomerania*, and deſtroyed a famous Mart-town called *Vineta*. So the ancient Borough of *Donewich* in *Suffolk* is almoſt quite eaten away and ruined by the Encroachments of the Sea. And it is ſaid that the Ocean hath cut off twenty Miles from the North part of the Iſland of *Ceylan* in *India*; ſo that it is much leſs at this day than formerly it was. And many the like Examples there are. And for the raiſing up of Iſlands near the ſhore, very likely it is that the Sea continually preying upon the ſhore, and waſhing away abundance of Earth from thence, cannot carry it far to any great diſtance from the ſhores, but lets it fall by little and little in their Neighbourhood: which ſubſiding or ſettling continually for ſome Ages, at laſt the heaps aſcend up to the very *Superficies* of the Water, and become Iſlands. Hence in the middle of the Ocean, there are no Iſlands, or but a very few, becauſe thoſe parts are too remote from the ſhores for any Earth waſhed from thence to be carried thither; and if it were, yet the Sea thereabout

is

is too deep to have any heap raiſed in it ſo high: beſides, the motions of the Water in thoſe depths, were there Earth enough, would overthrow any heap before it could be advanced any thing near the top. But all Iſlands in general, a very few excepted, are about the ſhores, or not far from the ſhores of the great Continents. Which thing is eſpecially to be remarked in all the great heaps or ſwarms of numerous Iſlands, they being all near to the Continents; thoſe of the *Ægean* Sea to *Europe* and *Aſia*; the *Heſperides* to *Africa*; and the *Maldivæ*, (which are thought to amount to eleven thouſand) to *India*: only the *Flandricæ* or *Azores* ſeem to be ſituate in the middle of the Ocean, between the *Old* and *New World*.

Beſides theſe Changes about the Sea-coaſts, by the prevailing of the Land upon the Sea, in ſome places, and the Sea upon the Land in others, the whole Continents ſeem to ſuffer a conſiderable mutation by the diminution, and depreſſion or ſinking of the Mountains, as I ſhall have occaſion to ſhew afterward in the third Diſcourſe.

*Ælian* in his eighth Book, *cap.* 11. telleth us, that not only the Mountain *Ætna*, but *Parnaſſus* and *Olympus* did appear to be leſs and leſs to ſuch as ſailed at Sea, the height thereof ſinking. Of this lowring and dimi-

nution of the Mountains I ſhall not ſay much in this place, but taking it for granted at preſent; only in brief intimate the Cauſes of it, aſſigned by that learned Mathematician *Joſephus Blancanus*, which are partly Rain-water, and partly Rivers, which by continual fretting by little and little, waſh away and eat out both the tops and ſides and feet of Mountains, and fill up the lower places of the Valleys, making the one to encreaſe, and the other to decreaſe; whereby it appears (ſaith Dr. *Hakewil*) that what the Mountain loſeth the Valley gains; and conſequently, that in the whole Globe of the Earth nothing is loſt, but only removed from one place to another; ſo that in proceſs of time the higheſt Mountains may be humbled into Valleys: and again (which yet I will not allow him) the loweſt Valleys exalted into Mountains. He proceeds, *Anaxagoras* (as *Diogenes Laertius* reports in his Life) being demanded what he thought, Whether the Mountains called *Lapſaceni* would in time be covered with Sea? anſwered *Yes, unleſs time it ſelf fail*; which anſwer of his ſeems to confirm the opinion of *Blancanus De Mundi fabrica, cap.* 4. where he maintains, That if the World ſhould laſt long enough, by reaſon of this continual decreaſe of the Mountains, and the levelling of the Valleys, the Earth

Earth would again be overflown with Waters, as at firſt it was.

Beſide theſe more eminent and remarkable Changes, which in proceſs of time, after a long ſucceſſion of many Ages, threaten ſome great effect; indeed no leſs then a reduction of the World to its primitive ſtate before the ſeparation of the Land and Water. There have been many other leſſer mutations made either by Earthquakes and Eructations of burning Mountains, or by great Floods and Shots of Rain, or by violent or tempeſtuous Winds and Hurricans, ſome whereof are mentioned by Naturaliſts and Hiſtorians, *Strabo*, *Pliny*, *Seneca*, *Ovid*, and others.

For Earthquakes, *Poſidonius*, quoted by *Strabo*, in his firſt Book, writes, That there was a City in *Phœnicia*, ſituate above *Sidon*, ſwallowed up by an Earthquake, and that almoſt two thirds of *Sidon* it ſelf fell therein, though not ſuddenly and all at once, ſo that there was no great deſtruction or ſlaughter of men happened. The ſame extended almoſt over all *Syria*, though not violently, and reached as far as ſome of the *Cyclades* Iſlands; and *Eubœa*, where the Fountains of *Arethuſa* in *Chalcis* were ſtopped up by it, and after many days broke forth again at another ſource: neither did it ceaſe to ſhake

the Iſland by parts, till the Earth opening in the Field *Lelantus* vomited out of a River of fiery Clay.

The ſame *Strabo* tells us, That *Democles* mentions huge Earthquakes of old in *Lydia* and *Ionia*, extending as far as *Troas*, by which many Villages were ſwallowed up, and *Sipylus* overthrown when *Tantalus* reigned, and great Lakes made of Fens.

And that *Duris* ſaith, That the *Rhagades* Iſlands by *Media* were ſo called from the Lands about the *Caſpiæ Portæ* being torn and broken by Earthquakes, ſo that many Cities and Villages were overthrown, and ſeveral Rivers received alterations.

And *Demetrius Calatianus* relating the Earthquakes that happened throughout *Greece*, writes, That a great part of the *Lichades* Iſlands and *Cenæus* had been drowned thereby; and that the hot Baths at *Ædepſus* and in *Thermophylæ*, having been ſtopt for three days, flowed again, and thoſe of *Ædepſus* from new Sources. That the Wall of *Oreus* on the Sea-ſide, and ſeven hundred Houſes, were thrown down; and a great part of *Echinus* and *Heraclea Trachinia*; but the whole building of *Phalarnus* was overturned from the very Soil or Plain of it; the like happened to the *Larians* and *Lariſſæans*; and that *Scarphia* was utterly demoliſhed

moliſhed and ſubverted from the very foundations, and not fewer then 1700 Perſons over-whelmed and buried; and more then half that number of the *Thronii*.

*Pliny* in his firſt Book, *chap.* 84. tell us, that in the Reign of *Tiberius Cæſar*, there happened an Earthquake (the greateſt that ever was in the memory of Man) wherein twelve Cities of *Aſia* were proſtrated in one night.

But what is that to what St. *Auguſtine* writes [*Lib.* 2. *De Miraculis SS. cap.* 3.] if that Book be his, *In famoſo quodam terræ motu centum Libyæ Urbes corruiſſe:* That in a famous Earthquake an hundred Cities of *Libya* were demoliſhed.

The City of *Antioch*, where the Diſciples of Chriſt were firſt called *Chriſtians*, with a great part of *Aſia* bordering upon it, was almoſt wholly ſubverted and ſwallowed up by an Earthquake in *Trajan*'s time, as *Dion Caſſius* writes; *Trajan* himſelf then wintering there.

The ſame City of *Antioch*, in the time of *Juſtinian*, in the Year of our Lord 528. was again ſhaken with a terrible Earthquake, wherein were overwhelmed and buried in the ruins of the Houſes above 40000 of the Citizens.

And laſtly, in the 61 Year after the laſt mentioned Earthquake, being again ſhaken

by a new one, it loſt 60000 of its Inhabitants: *Gregory* the then Biſhop, being by the Divine Favour, and in a manner miraculouſly preſerved, the Houſe wherein he abode falling down preſently after his going out of it.

*Euſebius* and *Spartianus* make mention of an Earthquake in the Emperour *Adrian*'s time, wherein *Nicomedia* and *Nicæa* of *Bithynia*, and *Nicopolis* and *Cæſarea*, Cities of *Palæſtina* were thrown down and ruined.

In the Year 1182. when *Saladin* ſet himſelf to overthrow the Kingdom of *Jeruſalem*, there happened an Earthquake, in which *Antiochia*, *Laodicea*, *Alapia*, *Cæſarea*, *Emiſſa*, *Tripolis*, and other famous Cities, were almoſt wholly thrown down and deſtroyed.

To omit many that are recorded in ancient Hiſtories and to come near to our times;

*Æneas Sylvius*, afterwards Pope by the Name of *Pius* the Second, in a Letter of his to the Emperour *Frederick*, thus pitifully deſcribes an Earthquake that fell out in his time; *Audies ex latore præſentium quàm mirabilia & incredibilia damna fecerit Terræmotus in Regno* Apuliæ, *nam multa oppida funditus corruerunt, alia magna ex parte collapſa ſunt.* Neapoli *omnes fere Eccleſiæ & maxima Palatia ceciderunt, pluſquam trigin-*

*ta*

*ta millia corpora oppreſſa ruinis traduntur, populus omnis habitat in tentoriis :* i. e. You ſhall underſtand by the Bearer of theſe Preſents, what wonderful and incredible loſſes an Earthquake hath wrought in the Kingdom of *Apulia* ; for many Towns are utterly ruined, others for the greateſt part fall'n : In *Naples* almoſt all their Churches and fair Palaces are overthrown; more then 30000 Perſons are ſaid to have been ſlain, all the Inhabitants dwell in Tents.

This Kingdom of *Naples*, eſpecially *Apulia* and *Calabria*, hath, I think, been oftner ſhaken, and ſuffered more by Earthquakes than any other part of *Europe*. For *Cluverius* tells us, That in the Year 1629. there were dreadful Earthquakes in *Apulia*, by which 17000 Men are ſaid to have periſhed.

And *Athanaſius Kircher* the Jeſuite, in the Preface to his *Mundus Subterraneus*, gives us a ſad Narrative of a diſmal Earthquake in *Calabria*, in the Year 1638. wherein himſelf was, and out of which he hardly eſcaped with his Life: Nothing to be ſeen in the whole Country he paſſed by for two hundred Miles in length, but the Carcaſſes of Cities, and the horrible ruins of Villages, the Inhabitants wandring about in the open Fields being half dead with fear and expecta-

tion

tion of what might follow. But moſt remarkable was the ſubverſion of the noted Town of *S. Eufemia*, which was quite loſt out of their ſight and abſorpt, and inſtead thereof, nothing left but a ſtinking Lake. But for a full account thereof I refer the Reader to the ſaid Preface.

Not many years ago the famous City of *Raguſa* was almoſt wholly ſubverted and deſtroyed by a terrible Earthquake; and *Smyrna* has lately been demoliſhed by one. From the *Weſt-Indies* we hear frequently of great Damages done in our Plantations by Earthquakes. The printed Tranſactions and Journals are full of theſe great Concuſſions and Subverſions.

This preſent Year 1692. on the Seventh day of *June* there happened a dreadful Earthquake in the Iſland of *Jamaica*, which made great Ruins and Devaſtations throughout the whole Country, but eſpecially in the Capital Town of *Port Royal*, which was almoſt ſwallow'd up and overflow'd, by the ſinking of the Earth, and irruption of the Sea: a full Account whereof contained in two Letters, ſent from the Miniſter of the Place, the one dated *June* the 22d, the other the 28th of the ſame Month, 1692. from aboard the *Granada* in *Port-Royal* Harbour, to a Friend of his in *England*, and publiſhed by Au-

Authority, I ſhall give the Reader, with ſome Remarks.

1. He tells us in general, That this Earthquake threw down almoſt all the Houſes, Churches, Sugar-works, Mills and Bridges throughout the whole Iſland: That it tore the Rocks and Mountains [others tell us, that it levelled ſome Mountains, and reduced them to Plains] that it deſtroyed ſome whole Plantations, and threw them into the Sea; but that *Port-Royal* had much the greateſt ſhare in this terrible Judgment.

2. Then he acquaints us, what for to ſave the Reputation of the People, and to avoid the laying a perpetual blot upon them, I ſhould rather ſuppreſs and conceal, but for the vindication of the Divine Providence and Juſtice, and to deter others from the like Enormities, I think neceſſary to publiſh, That the Inhabitants of that Place were a moſt ungodly and debauched People, and ſo deſperately wicked, that he was even afraid to continue among them: for that very day this terrible Earthquake was, as ſoon as night came on, a company of lewd Rogues, whom they call Privateers, fell to breaking open Warehouſes and Houſes deſerted, to rob and riffle their Neighbours, whilſt the Earth trembled under them, and ſome of the Houſes fell upon them in the Act. [The like

like Robbers and Plunderers we were told wandered up and down the Country, even in the very ſmoke, during the laſt great burning and eruption of *Ætna* in *Sicily*.] And thoſe audacious Whores that remained ſtill upon the Place, were as impudent and drunken as ever; and that ſince the Earthquake, when he was on ſhore to pray with the bruiſed and dying People, and to Chriſten Children, he met with too many drunk and ſwearing. And in his ſecond Letter, he ſaith poſitively, That there was not a more ungodly People on the Face of the Earth.

The Account he gives of the Motions and Effects of the Earthquake is as followeth: The day when this Calamity befel the Town and Iſland was very clear, affording not any ſuſpicion of the leaſt evil. [This is obſerved of moſt Earthquakes, and particularly of our laſt here in *England*, the morning before it being clear and calm.] But in the ſpace of three Minutes, about half an hour after Eleven in the Morning, *Port-Royal*, the faireſt Town in all the *Engliſh* Plantations, [and well might he call it ſo, as he writes in another place of his Letter, moſt of the Houſes upon the *Wharf* were built of Brick, and as fair as thoſe in *Cheapſide, London*] the beſt *Emporium* and Mart of this part of the World, exceeding in Riches and

and abounding in all good things, was ſhaken and ſhattered to pieces, and covered for the greateſt part by the Sea. The Wharf was entirely ſwallowed by the Sea, and two whole Streets beyond it. Himſelf, with the Preſident of the Council, being in a Houſe near where the Merchants meet, hearing the Church and Tower fall, ran to ſave themſelves: He having loſt the Preſident, made toward *Morgan*'s Fort, becauſe being a wide open place, he thought to be there ſecureſt from the falling Houſes, but as he was going he ſaw the Earth open, and ſwallow up a multitude of People, and the Sea mounting in upon them over the Fortifications: Moreover he tells us, That their large and famous Burying place, called the *Palliſado's*, was deſtroyed by the Earthquake; and that the Sea waſhed away the Carcaſſes of thoſe that were buried out of their Graves, their Tombs being daſhed to pieces by the motion and concuſſion. That the whole Harbour, one of the faireſt and goodlieſt that ever he ſaw, was covered with the dead Bodies of People of all Conditions floating up and down without burial. That in the opening of the Earth, the Houſes and Inhabitants ſinking down together, ſome of theſe were driven up again by the Sea which aroſe in thoſe Breaches, and wonderfully eſcaped

ped: Some were ſwallowed up to the neck, and then the Earth ſhut upon them, and ſqueezed them to death; and in that manner ſeveral were left buried with their Heads above ground, only ſome Heads the Dogs have eaten, others are covered with Duſt and Earth by the People which yet remain in the place, to avoid the ſtench. So that they conjecture, that by the falling of the Houſes, the opening of the Earth, and the inundation of the Waters, there are loſt Fifteen hundred perſons, and many of good note, as Attorney General *Muſgrove*, Provoſt Marſhal *Reeves*, Lord Secretary *Reeves*, &c.

Further he tells us, That after he was eſcaped into a Ship, he could not ſleep all night for the returns of the Earthquake almoſt every hour, which made all the Guns in the Ship to jar and rattle. And he ſuppoſes that the whole Town of *Port Royal* will in a ſhort time be wholly ſwallowed by the Sea; for few of thoſe Houſes that yet ſtand are left whole, and that they heard them fall every day, and that the Sea daily encroached upon them. That they had Accounts from ſeveral parts of thoſe Iſlands of Miſchiefs done by the Earthquake. From St. *Anns* they heard of above 1000 Acres of Woodland changed into Sea, carrying with it

it whole Plantations. And laſtly, That he was told by ſome, that they ſtill heard bellowings and noiſes in the Mountains, which made them very apprehenſive of an eruption of Fire; which if ſo, he feared might be more deſtructive then the Earthquake. [But I think cauſleſly, (for I never heard or read of any great deſtruction of Men made by any eruptions of Fire, even out of burning Mountains.]

4. The Account he gives of his own unexpected and ſtrange preſervation, take his own words: *After I had been at Church reading Prayers, (which I did every day ſince I was Rector of the Place, to keep up ſome ſhew of Religion) and was gone to a place hard by the Church, where the Merchants meet, and where the Preſident of the Council was; who came into my Company, and engaged me to take a Glaſs of Wormwood Wine as a whet before dinner; he being my very great Friend, I ſtaid with him; upon which he lighted a Pipe of Tobacco, which he was pretty long in taking; and not being willing to leave him before it was out, this detained me from going to dinner to one Captain* Ruden's, *whither I was invited; whoſe Houſe upon the firſt concuſſion ſunk firſt into the Earth, and then into the Sea, with his Wife and Family, and ſome that were come to dine with him: Had I been there*

*there I had been loſt. But to return to the Preſident, and his Pipe of Tobacco; before that was out I found the ground rowling and moving under my feet, upon which I ſaid to him,* Lord! Sir, what is this? *He replyed very compoſedly, being a very grave Man,* It is an Earthquake, be not afraid, it will ſoon be over: *but it increaſed,* &c. Then he relates how he went to his own Lodging, and found all things in order there, nothing ſtirred out of its place, and going into his Balcony to view the Street, he ſaw never a Houſe down there, nor the ground ſo much as crackt: And that after he had prayed with the People at their earneſt requeſt, and given them ſome ſerious Exhortations to Repentance, in which Exerciſes he ſpent near an hour and half, there came ſome Merchants of the place to him, deſiring him to go aboard ſome Ship in the Harbour and refreſh himſelf, telling him that they had gotten a Boat to carry him off. Whom he accompanied, and paſſing over the tops of ſome Houſes, which lay levelled with the Surface of the Water, got firſt into a Canoe, and then into a Long Boat, which put him on board a Ship.

5. The laſt thing I ſhall take notice of in theſe Letters, ſhall be the influence and effect this Judgment had upon the Remainder of the

the People, to bring them to a ſence of their Sins and Repentance for them, and to reſolve upon and begin a Reformation and Amendment of their Lives. It is a true ſaying, *Vexatio dat intellectum : In their affliction they will ſeek me early.* The pious inclination of the People appeared in that they were ſo glad to ſee their Miniſter in the midſt of this Diſaſter, and ſo earneſt with him to come down and pray with them when they ſaw him in the Balcony beforementioned ; and that when he came down into the Street, every one laid hold on his Cloaths and embraced him, ſo that with their fear and kindneſs he was almoſt ſtifled. And that not only at the inſtant of the Diſtreſs, but afterwards when he went a-ſhore to bury the Dead, and pray with the Sick, and baptize the Children, and preach among them, the People were over-joyed to ſee him, and wept bitterly when he preached to them. Fear is a more powerful Paſſion then Love : and whatever creates terrour is a more effectual Curb to reſtrain and rule Men as well as Children, then any Favours or Benefits the moſt powerful Motives of Love and Affection : For though the *Bonds of Love* are called the *Cords of a Man*, and are indeed very ſtrong ones to rational and ingenuous Perſons, yet the greateſt part of

Mankind are ſo far degenerated, that *they have broken theſe bonds, and caſt theſe cords* from them; and upon trial, one ſhall find little of Gratitude or Ingenuity among them.

I ſhall add one or two Remarks upon the precedent Paper.

Firſt, It is very remarkable that the day, when all this befel *Port-Royal* and the whole Iſland of *Jamaica*, was very clear, not affording the leaſt ſuſpicion of any evil: ſo that the Inhabitants had no warning at all of it, but were ſurpriſed of a ſudden, without time ſufficient to eſcape and ſave themſelves. For in the ſhort ſpace of three Minutes the Town was ſhaken and ſhattered to pieces, and ſunk into, and covered for the greateſt part by the Sea. In which reſpect this Judgment reſembled thoſe on the Old World and on *Sodom*, which, the Scripture tells us, were to the People involved in them ſudden and unexpected; as alſo the ſecond coming of Chriſt, and future Diſſolution of the World by Fire is predicted to be.

That the Cauſe of Earthquakes is the ſame with that of Thunder, I doubt not, and moſt learned Men are agreed; that is, Exhalations or Steams ſet on fire, the one in the Clouds, the other in the Caverns of the Earth; which is ſufficiently proved from the great de-

deflagrations and eruptions of *Vulcano*'s or burning Mountains; they being always either preceded or attended by Earthquakes; and Earthquakes, even here in *England*, being, as far as I can underſtand, for the moſt part accompanied with a noiſe. But now of what nature this ſteam is that is thus inflamed, and what cauſes the accenſion, I muſt confeſs my ſelf not to be yet fully ſatisfied. That it is at leaſt partly Sulphureous is certain, and well proved by Dr.* *Liſter* from the Sulphureous ſtink of waters ſmelt before, and of the very Air it ſelf after them: That it conceives fire of its ſelf, and is not kindled after the manner of Gunpowder by the touch of fire, is as clear, there being no fire præexiſting in the Clouds; but how it ſhould kindle, unleſs by a colluctation of parts after the manner of fermentations, I cannot conceive. And if ſo, then the ſteam muſt be a diſſimilar Body compoſed of parts of different Natures; elſe would there be no colluctation, and conſequently no accenſion, the parts friendly conſpiring and agreeing in the ſame motion.

* *Philoſoph. Tranſact.* N. 157.

I am not ignorant that water, either in the groſs body, or in vapour, may and doth ſo far work upon ſome ſolid Bodies, as for example, Quicklime, Hay in a Mow, the

Pyrites or Fireſtone, &c. as to cauſe an incaleſcency and even an accenſion; but ſtill this is by the diſcord or contrariety of the parts of water or vapour, and thoſe of the foremention'd Bodies meeting and ſtrugling together. So in Tempeſts of Thunder and Lightning, the fume contain'd in the Clouds, which my honoured Friend Dr. *Martin Lyſter* ſuppoſes and proves to be no other then the breath of the Pyrites, encountering with the vapour of water, there may very likely by the concourſe and conflict of theſe two be produced firſt a great heat, and afterwards an actual fire.

As for Thunder, after the ſteams incloſed in the Cloud are once inflamed, I conceive the fire goes not out till the end of the Tempeſt, but when the inflamed matter is ſo much dilated that the cavity of the Cloud cannot contain it, it rends the Cloud and forces its way through where it is moſt yielding, ſo much of the fire eſcaping at the breach, till the Cloud overcomes the reſiſtance of the remainder, and cloſes it ſelf again; and continues ſhut, till there be ſo much of the Sulphureous ſteam anew inflamed as to have ſtrength enough to tear it, and break out the ſecond time, which proceſs is repeated, till the whole ſteam be burnt and conſumed, and the fire go out; or till the

the Cloud be quite condenſed and ſaln down in rain. That this vapour or ſteam in the Clouds heats gradually before it comes to accenſion, I think probable, becauſe before any conſiderable Tempeſt the Air beneath is ſultry (as we call it) that is, ſuffocatingly hot.

So likewiſe in the Caverns of the Earth it is not unlikely that the ſteams or damps that cauſe Earthquakes before ignition, may be gradually heated by a colluctation of parts; but their accenſion ſeems to be very ſudden, and in manner of exploſion, like that of Gunpowder; the ſuccuſſion coming unexpectedly without any notice-giving, and being alſo very tranſient, and of ſhort continuance. I mean Earthquakes where there are no eructations of fire, ſuch as ours in *England* are.

There is a ſort of Damp which ſome call a Fire-damp or Fulminating-damp, of which I had the firſt notice from my honoured Friend *Francis Jeſſop* Eſq; *An.* 1668. whereof I find a Relation ſince communicated by him in a Letter to Dr. *Liſter*, publiſhed in the *Philoſophical Tranſactions*, Numb. 117. and a further Account from him in Anſwer to ſome Queries propoſed by the Honourable Mr. *Boyl* in the *Philoſophical Tranſactions*, Numb. 119. wherein he writes, That this ſort of

Damp preſently takes fire at the touch of a lighted Candle, or other flaming Matter, and flies out of the mouth of the bink or ſhaft with a crack like a Gun. He inſtances in three Perſons that had been hurt by it; one in the Coal-mines in *Haſleberg* Hills, who had his Arms and Legs broken, and his Body ſtrangely diſtorted by it. A ſecond in thoſe at *Wingerſworth*, who going into a bink, where this kind of Damp was, to fetch ſome of his Tools, with a Candle in his hand, found himſelf on a ſudden environ'd with flames, ſo that his face, hands, hair, and a great part of his Clothes were very much burnt. He heard very little noiſe, but one who was working at the ſame time in another bink, and thoſe that were above ground heard a very great one, like a clap of Thunder, wherewith the Earth ſhook; which hearing, they ran in a great amazement to ſee what the matter was, with their Candles in their hands, which were twice extinguiſhed, but held upon the third Lighting. They ſaw nothing, but met with an intolerable ſtench of Brimſtone, and an heat as ſcalding as an Oven half-heated, which made them glad ſpeedily to quit the place. A third at the ſame place met with the ſame accident: and the fore-mention'd perſon happening then to ſtand at the mouth of the fired bink,

was

was ſhot forth about two or three yards, and had his head broken and body bruiſed againſt the further ſide; the ſame alſo a third time incurred the like diſaſter. That it ſhot off the Turn at the mouth of the Pit to a conſiderable height. That they could perceive no ſmell before the fire, but afterwards a very ſtrong one of Brimſtone. That the Damp hung about the top of the bink, and therefore they were forc'd to go with their Candles very low, elſe it would have taken fire. That the flame would continue in the Vault two or three Minutes, ſometimes more after the crack. That he could never hear of any Damps that kindled of themſelves. That from the breaking of theſe Fulminating-damps proceeded a black ſmoke of the ſmell and colour of that from Gunpowder fired.

This ſort of Fire-damp Mr. *Beaumont* tells us, they have alſo in ſome Coal-works bordering on *Mendip* Hills. See *Philoſoph. Collect.* 1. And Mr. *George Sinclair* in a Land called *Werdy*, weſt of *Leith*, which even in the day-time is ſometimes ſeen in Coal-works in little holes, ſhining like kindled Sulphur. But the moſt ſtrange Fire-damp was that which happen'd at *Moſtyn* in *Flintſhire* at the ſame time with that at *Wingerſworth* [1675.] which as ſoon as the Colliers were ſcanted

of Air appeared in the creviſſes or ſlits of the Coal, where water had been before, in a ſmall blewiſh flame, flaſhing and darting like Sword-blades from ſide to ſide of the Pit: and being kindled, had the ſame and more violent effects than thoſe of *Haſleberg* or *Wingerſworth*, leaving a foul ill-ſented ſmoke behind it. In the laſt there mention'd [*Philoſoph. Tranſact.* Numb. 136.] firing of it by one who ran indiſcreetly with his Candle over the Eye of the damp Pit, it flew to and fro over all the hollows of the work with a great wind and mighty roaring, tore the Mens clothes from their backs, ſindging and burning them, as alſo their hair and skins, carrying ſome of them 15 or 16 yards from their firſt ſtation, beating them againſt the Roof of the Coal and the Poſts. As it drew up to the Day-pit, it caught one that was next the Eye along with it, and up it comes and was diſcharged out of the mouth of the ſhaft with a terrible crack, not unlike, but more ſhrill then a Cannon, ſo that it was heard fifteen miles off. The Man's Body, and other things from the Pit, were ſeen in the Air above the tops of the higheſt Trees that grew on the brow of the Hill (eighteen yards above the Pit) more then 100 yards. The barrel of an Horſe Engine for winding up the Rope of above 1000 pound weight,

weight, though faſtned to the frame with Locks and Bolts of Iron, together with the Buckets and Rope was thrown up, and carried a good way from the Pit, and pieces torn off from it ſcattered about the Woods. And laſtly the whole frame of the Engine moved out of its place. The whole Relation deſerves well to be read.

That which ſeems to me moſt ſtrange and Romantick is the motion of the Damp, that as if it had been a living thing, it ſhould fly up with a long ſharp flame to lighed Candles ſet over the Eye of the Pit, and put them out: And yet Mr. *Jeſſop* alſo mentions a like motion in that of *Wingerſworth*; *For if*, ſaith he, *in the link where it was, they held their Candles any higher then ordinary, they could ſee the Damp, which lay near the Roof, to deſcend like a black Miſt, and catch hold of the flame, lengthning it to two or three handfuls.*

By theſe Deſcriptions, this Damp ſhould ſeem to be but Gunpowder in a vapour, and to partake the Sulphur, Nitre, and *Bitumen*, as the Learned Dr. *Plot* well proves in his *Natural Hiſtory of Staffordſhire*, c. 3. §. 47. to which I refer the Reader. But for the accenſion of it, whether it ever takes fire of it ſelf, I am in ſome doubt. Mr. *Jeſſop* denies it of thoſe of *Haſleberg* and *Wingerſworth*;

*worth*; and how far thoſe Relators that affirm it are to be credited, I know not.

If in this particular I were ſatisfied, I ſhould readily accord with the Doctor, That our Earthquakes in *England*, and any others that have but one ſingle Pulſe, owe their Original to the kindling and exploſion of Fire-damps.

You will ſay, That fire is the cauſe of Thunder we readily grant, becauſe we ſee it plentifully diſcharged out of the Clouds: but what reaſon have we to think ſo of this ſort of Earthquakes, where we ſee no lightning or eruption of fire at all? What becomes of the incloſed flame?

In anſwer hereto, I demand, what becomes of it in the open Air? It diffuſes it ſelf through the Caverns of the Earth, till the deflagration be made, and is there diſſipated and diſſolved into Fume and Aſhes. It breaks not forth; I conceive, becauſe by reaſon of the depth of the Caverns wherein it is lodged, it is not able to overcome the reſiſtance of the incumbent Earth, but is forced *Quà data porta ruere*, to make its way where it finds eaſieſt paſſage through the ſtrait *Cuniculi* of the Earth: as in a Gun the inflamed Powder, though if it were at liberty, and found equal reſiſtance on every ſide, it would ſpread equally every way; yet by reaſon of the

the ſtrength and firmneſs of the Mettal, it cannot tear the Barrel in pieces, and ſo break out; but is compelled to fly out at the muzzel, where it finds an open, though ſtrait paſſage. For the force of flame, though very great, is not infinite.

It may be further objected, We hear not of any eruption of fire at *Port-Royal*, or elſewhere in this Iſland, and yet the Earth open'd, and the roofs of the Caverns fell in, therefore fire could not be the cauſe of this Earthquake; for if it had, at thoſe apertures and rifts of the ground, it muſt needs have iſſued forth and appeared abroad.

To which I anſwer, That the Vaults and Cavities wherein the inflamed Matter was impriſoned and the exploſion made, lay deep in the Earth, and were covered with a thick and impenetrable Coat of hard ſtone, or other ſolid matter which the fire could not tear, but that above this coat there were other ſuperficial hollows in a more looſe and crumbling Earth, which being not able to ſuſtain the ſhock, and hold out againſt the impetuous agitations of the Earthquake, the roofs might yield, open, and ſubſide, as we hear they did, and give way to the Sea to ruſh in and ſurmount them.

You

You will reply, This may be a tolerable account of our *Engliſh* Earthquakes, which are finiſhed at one exploſion, but what ſhall we ſay to thoſe of *Jamaica*, which like a Tempeſt of Thunder and Lightning in the Clouds, have (as we learn by this Relation) ſeveral Paroxyſms or Exploſions, and yet no diſcharging of fire?

To which I anſwer, That I conceive the Caverns of the Earth wherein the inflamed Damps are contained, are much larger there then ours in *England*; and the force of the fire joyned with the elatery of the Air being exceeding great, may of a ſudden heave up the Earth, yet not ſo far as to rend it in ſunder, and make its way out, but is forced to ſeek paſſage where it finds leaſt reſiſtance through the lateral *Cuniculi*. So the main Cavern being in a great meaſure emptied, and the exteriour parts of the extended matter within cooling and ſhrinking, the Earth may ſubſide again, and reduce the Cavern to its former dimenſions. Yet poſſibly there may not be a perfect deflagration and extinction of the fire, and ſo new Damps aſcending out of the Earth, and by degrees filling the Cavern, there may ſucceed a ſecond inflamation and exploſion, and ſo a third, and fourth, till the ſteams be quite burnt up and conſumed. But in this, I confeſs, I do not

ſatisfie

ſatisfie my ſelf. They who have a more comprehenſive knowledge of all the *Phænomena*, may give a better account.

But as for thoſe Earthquakes that are occaſioned by the burnings of *Vulcano's*, they are, I conceive, of a different nature. For in them the fire burns continually, and is never totally extinct, only after the great eruptions, in which, beſides ſmoke and fire, there is an ejection of abundance of Aſhes, Sand, Earth, Stones, and in ſome floods of melted Materials, the raging is for a time qualified; but the fire ſtill continuing, and by degrees increaſing in the combuſtible matter it finds in the hollows of the Mountains, at laſt ſwells to that exceſs, that it melts down Metals and Minerals where it meets with them, cauſing them to boil with great fury, and extending it ſelf beyond the dimenſions of the Cavities wherein it is contained, cauſes great ſuccuſſions and tremblings of the Earth, and huge eruptions of ſmoke, and caſts out ſuch quantities of Aſhes, Sand and Stones as we juſt now mentioned: and after much thunder and roaring by the alliſion and repercuſſion of the flame againſt and from the ſides of the Caverns, and the ebullition and volutation of the melted Materials, it forces out that boiling matter either at the old mouths, or at new ones, which

which it opens where the incumbent Earth is more thin and yielding. And if any water enters thoſe Caverns, it mightily encreaſeth the raging of the Mountain. For the fire ſuddenly diſſolving the water into vapour, expands it to a vaſt dimenſion, and by the help thereof throws up Earth, Sand, Stones, and whatever it meets with. How great the force of water converted into vapour is, I have ſometimes experimented by inadvertently caſting a Bullet in a wet mold, the melted Lead being no ſooner poured in, but it was caſt out again with violence by the particles of water adhering to the mold ſuddenly converted into vapour by the heat of the Metal.

Secondly, The People of this Plantation being generally ſo ungodly and debauched in their lives, this Earthquake may well be eſteemed by this Gentleman, the Miniſter of *Port-Royal*, a Judgment of God upon them.

For though it may be a ſervile complaint, and popular miſtake, that the former times were better than theſe, and that the World doth daily degenerate, and grow worſe and worſe. *Ætas parentum pejor avis tulit hos nequiores, mox daturos Progeniem vitioſiorem.* For had this been true, Vice would long before this time have come to the height and great-

greateſt poſſible exceſs: and this Complaint hath been made as well in the beſt as worſt of times. Though I ſay this be partly an errour, yet I do verily believe, that there are certain times when Iniquity doth abound, and Wickedneſs overflow in a Nation or City; and that long Peace and Proſperity, and great Riches, are apt to create Pride and Luxury, and introduce a general Corruption of Manners: And that at ſuch times God uſually ſends ſome ſweeping Judgment, either utterly deſtroying ſuch a People who have filled up the meaſure of their iniquity, or at leaſt grievouſly afflicts and diminiſhes them. So when in the old World *the wickedneſs of man was great upon the earth, and every imagination of the thoughts of his heart was only evil continually*, Gen. 6. 5. *And the earth was corrupt before God, and filled with violence, all fleſh having corrupted their ways*, verſ. 11. & 12. God brought in the Flood, and drowned them all. The like vengeance we find executed on the Cities of *Sodom* and *Gomorrha* after ſuch a monſtrous height of wickedneſs as the Inhabitants were generally arrived at. And we ſhall find it noted by Hiſtorians, That before any great publick Calamity or utter Exciſion of a Nation, the People were become univerſally vicious and corrupt in their Manners, and without

out all fear of God or ſence of Goodneſs. For God doth not ſtand by as an idle and unconcerned Spectator, and ſuffer things to run at random; but his Providence many times interpoſes, and ſtops the uſual courſe and current of Natural Cauſes: Nay, I believe and affirm, That in all great and notable Revolutions and Mutations he hath the greateſt hand and intereſt; himſelf ordering and governing them by his ſpecial Superintendence and influence. So though the Inſtruments and Materials wherewith this devaſtation in *Jamaica* was made, as a ſubterraneous fire and inflamable materials, were before in the Earth, yet that they ſhould at this time break forth and work, when there was ſuch an inundation of wickedneſs there, and particularly and eſpecially at *Port-Royal*, this we may confidently ſay, was the finger of God, and effected perchance by the miniſtery of an Angel.

Moreover, This Relator's being called aſide, and ſtopped from going to a place, whither if he had then gone he had certainly periſhed, we have good reaſon to think an effect of Providence, deſigning thereby his preſervation; as *Gregory* the Biſhop of *Antioch* his going out of the Houſe wherein he abode immediately before it fell down, was rationally thought to be in reſpect of him.

But

But to proceed; I ſhould now have done concerning Earthquakes, it being my deſign only to take notice of ſuch as have made conſiderable mutations in the ſuperficial part of the Earth, paſſing by thoſe, which after a ſhort trembling and ſuccuſſion have left the Earth as they found it, making no alteration at all therein. But at the very time this ſheet of Earthquakes was Compoſing, there happening a notable one, though of this latter kind, in our own Country, I was partly by the coincidence of it, with the compoſure before-mentioned, partly at the requeſt of the Bookſeller, induced to make ſome mention of it, and add what I knew or could learn of its Hiſtory; which is indeed very little and inconſiderable, we having as yet but a very lame and imperfect account of the Accidents of it.

As for the *time* when it happened, it was the 8th of *September* 1692. about 4 Minutes paſt Two of the Clock in the Afternoon, as was obſerved at *London*; hereabouts I can hear of no body that was ſo critical in noting the time, only they agree that it was about Two of the Clock. Had we a punctual and exact notice of the very Minute that it happened in far diſtant places, we might thence gather ſomething concerning the motion and progreſs of it. However it is re-

markable that it happened in the *Autumn*, one of the Seaſons in which *Ariſtotle* tells us ſuch effects are moſt frequent, the other being the Spring; and likewiſe in the Month of *September*; in the which that about *Oxford* in the Year 1683. fell out: and moreover in a wet Seaſon, as that alſo did; though the Forenoon of the day was clear and fair, yet in the Afternoon, when the Earthquake was paſt it rained hard till Night, the whole precedent Summer (to this I mean) having been cold and wet: which what influence it can have toward the production of an Earthquake, unleſs by ſtopping the Pores of the Earth, and hindring the evaporation of thoſe ſulphureous ſteams, which are the efficients of it, I know not. The ſame Night ſucceeded ſome ſtrokes of Thunder and Flaſhes of Lightning both here and at *London*, and ſince then we have had great ſtorms of Wind. I might have taken notice, that for ſome Mornings before we had ſmart Froſts for the time of the Year.

Since this was written and ſent away in order to printing, I am adviſ'd by Letter from my honoured Friend Dr. *Tancred Robinſon*, that this Earthquake was not confin'd to ſome Counties of *England*, as *Middleſex*, *Eſſex*, *Kent*, *Suſſex*, *Hampſhire*, &c. but ſpread far into Foreign Parts; an Account whereof I ſhall

ſhall give you in the Doctor's own words. *The Concuſſion or Vibration of our late Earthquake was felt in moſt parts of the* Dutch *and* Spaniſh Netherlands, *as alſo in* Germany *and* France: *It affected places moſt upon the Sea-Coaſts, and near the great Rivers as* Zealand, Cologn, Mentz, *and the Bridge of* London. *It went not beyond* 52 *Degrees and* 40 *Minutes of Northern Latitude; how far it reach'd to the South and Eaſt, is not yet certainly known for want of good Intelligence, we have already traced it beyond* Paris *to the* 48 *degree of N. Latitude, and beyond the* Rhine *on the Eaſt to* Francfort; *ſo that we know at preſent of* 260 *Miles ſquare ſhaken by it. The motions of ſome Machines were very ſenſibly ſtop't or retarded by the* Choc, *eſpecially* Pendulums; *and there were ſome alterations in the Air (as to its ſmell, ſpring, and gravity) both before and after. The time of its happening here in* England, *and beyond the Seas, ſeems to vary ſome Minutes, but that may eaſily be accounted for by the difference of* Meridians. Thus far the *Doctor. Dat. Septemb.* 22.

The duration or continuance of it (as I am informed by ſome curious and attentive Obſervers) about *London* was about Two Minutes; here not ſo long.

The manner of the motion, as I am aſſured by my Learned and Ingenious Friend and Neighbour Mr. *Allen*, Phyſitian in *Braintree*, who had it from ſeveral intelligent and obſervant Perſons hereabouts, and that lived in diſtant places, was firſt a manifeſt heaving upwards, and after that a trembling, or vibration, or agitation to and fro. So that in the firſt reſpect, its motion ſeemed to reſemble that of the Blood in an Artery ſtretching the Channel as it paſſed.

The motion of it was moſt conſiderable upon Hills and in Valleys.

The effect it had upon thoſe who were ſenſible of it was a ſwimming or dizzineſs in their Heads, and this was general upon all. In ſome it affected their Stomacks, and created a loathing and inclination to vomit: Some of the tenderer Sex found in themſelves ſuch a diſpoſition as they have had before a ſwooning fit. All which muſt be the effects either of the heaving or tremulous motion, or both; and yet no motion of Boat or Coach doth ſo ſuddenly affect and diſturb the Head or Stomack.

Laſtly, It was attended with a noiſe, as our Earthquakes generally in *England* are, as is obſerved by Mr. *Pigot* in that of *Oxford* in the Year 1683. and by my ſelf when I lived in *Sutton Cofield*, in one that happen'd there

in

in the Winter time as I remember in the Year 1677. and extended at leaſt 40 Miles in length into *Worceſterſhire.* The noiſe I heard ſeem'd to be in the Air. This noiſe hereabouts was heard but in few places, and by few perſons, but yet I am well aſſured by ſome, and thoſe of the Vulgar and Ignorant ſort, who reported it of themſelves, having no reaſon to feign it, and who had never heard that any ſuch thing accompanied Earthquakes.

From many of the fore-mentioned particulars it may be collected, That the Caverns in which the inflamed Damp cauſing this Earthquake was contained, lye deep in the Earth, elſe could it not have ſhook ſuch a vaſt extent of Ground, both Hills and Valleys, paſſing under the Channels of great Rivers, and even Creeks of the Sea, and not being ſtop't by them; and if it had not lain deep, it would in all likelyhood ſome where or other have rent the Earth, and broken forth. And yet notwithſtanding the depth, it ſhould ſeem it found ſo much vent as to affect the external Air, and create a ſound: for if the Caverns wherein the Damp was had been cloſe ſhut up with ſuch a thick Coat of Earth, I doubt whether the trembling and vibration of the ſoft Earth alone would have produced ſuch a noiſe abroad in

the Air; and the vapour of it alſo made a ſhift to ſtruggle through the Pores of the Earth into the open Air, in ſuch quantity as to affect the ſence; a ſulphurous ſcent having been obſerved in the Air both before and after the Concuſſion.

It is moreover very remarkable, That there were ſome particular ſpots which were not at all ſtirred in thoſe Countreys where the places not far diſtant round about were ſhaken; as *Sturbridge-Fair* before remembred, and that where my Dwelling is; neither my ſelf, nor any of my Family, though they were above ſtairs, nor any of our near Neighbours being ſenſible of the leaſt motion or impreſſion of it, and yet thoſe living within leſs then half a mile had their Houſes conſiderably ſhaken by it.

It is alſo worth the noting, That both this, and all other Earthquakes I have heard or read of in *England*, have been very ſhort, and finiſhed at one exploſion; which is an argument that the Cavities and *Cuniculi*, wherein the enflamed matter is contained and moves, are very ſtrait and of ſmall dimenſions. Exploſion I call it, becauſe by the quickneſs of the motion it ſeems rather to reſemble that of Powder in a Gun, then that of a Squib running in a Train of Powder. Though others I have read of whoſe motion

was

was very ſlow; as that obſerved by the Honourable Mr. *Boyl*, and deſcribed in the *Philoſophical Tranſactions*, Numb. 11. Had we certain knowledge where the greateſt force of this Earthquake was, we might thence learn where its firſt accenſion was, and which way it ſpread it ſelf. But I have not time to enlarge further concerning it, or to give an account of all its *Phænomena*, leſt I injure the Printer by ſtopping the Preſs: neither indeed would it be prudence to attempt it, till we have a more particular and perfect Hiſtory of it.

Since this was written and ſent away to the Printer, intelligence is come from beyond the Seas, that *Flanders* and all *Holland*, part of *France* and *Germany*, were ſhaken by this Earthquake, and conſequently the interjacent Provinces, which is a clear demonſtration of our Opinion, That the inflamed Damp, which cauſed it, was lodged deep in the Earth, the *Cuniculi* or Caverns which contained it paſſing under the very bottom of the Sea. It is alſo a great confirmation of what we have delivered concerning the Mountains of *Ætna*, *Stromboli*, and *Veſuvius* communicating by Submarine paſſages. Add hereto, that *Gaſſendus* in the Life of *Peireskius* reports, That at the Mountain *Semo* in *Æthiopia*, there happened a

burning at the ſame time with that of *Veſuvius* in *Campania*, *viz.* in the Year 1633. So that not only *Veſuvius* communicates with *Ætna* by ſubterraneous Vaults, but alſo (as he rationally infers) *Ætna* with the Mountains of *Syria*, the Tunnels running under the depths of the *Mediterranean* Sea, and thoſe with the *Arabian*, and laſtly the *Arabian* with Mount *Semo* in *Æthiopia*.

That an inflamed Damp or ſubterraneous Fire is the cauſe of all Earthquakes in general, and not only ſuch as precede the eruptions of *Vulcano's*, may be proved by an eminent inſtance of an Earthquake happening *May* 12. 1682. which ſhook the greateſt part of *France* and *Switzerland*, and reach't as far as *Collen* in *Germany*: an Account whereof we have in the *Journal des Scavans* ſet forth *June* 1. 1682. inſerted in the *Weekly Memorials* printed for Mr. *Faithorne*, Numb. 23. In which they write, That it was perceived in *Lionnois*, (which was wont to paſs for a place exempt from ſuch Accidents) in *Dauphiny* and *Beaujolois*, though very little, and without any ill conſequence. That at *Metz* in *Lorrain* the Watch-place of a Bulwark was thrown down into the Ditch, with the Soldier that ſtood Sentinel there.

That

That at *Tonnerre* the Houſes and Churches were ſo terribly ſhaken, as if ſeveral Coaches with ſix Horſes had driven along full ſpeed through the Streets; and that it threw down ſeveral Rocks on the ſide of *Bourbirant*. They tell alſo that it ſtop't a Fountain at *Raviere* hard by (which at fifty paces from its head turns a Mill) for half an hour.

That it was perceived in *Provence* by the ſhaking of Windows and Beds, and opening of Doors, and that it had two ſeveral motions or pulſes, as ours alſo was by ſome obſerved to have: and that the Domeſtick Animals, as Sheep, Cows, Horſes, and Poultry did diſcover their fear by unuſual motions and cries. And the Sheep at *Dijon* in *Burgundy* could not be ſtopt from getting into their Stalls at four of the Clock in the Afternoon, which were not then wont to betake themſelves thither till Sun-ſet.

That the Cities of *Orleans*, *Troyes*, *Sens*, *Chalons*, *Joinville*, *Reims*, *Soiſſons*, *Laon*, *Maſcon*, *Dole*, *Strasbourg*, &c. felt the Effects of it.

But at *Remiremont* upon the *Moſelle*, where it exerted its greateſt force, throwing down ſeveral Houſes, inſomuch that the Inhabitants were forced to betake themſelves into the Fields for ſix weeks time; there

there was a noiſe heard like Thunder, and flames frequently broke out of the Earth of a noiſome ſcent, but not Sulphureous, and which burnt nothing, yet was there no riſt or chap in the ground, ſave only in one place, the depth whereof was in vain ſearch't, and which afterwards cloſed up. And before this Earthquake alſo flames appeared for 4 days upon a Mountain near *Geneva*.

It is very ſtrange and remarkable that the flames that iſſued out were of the nature of an *Ignis fatuus*, and burnt nothing; and that (as Monſieur *Colbert* writes) the Earthquake raged every Night, and never in the Day-time.

Concerning Earthquakes, I ſhall only add two Obſervations.

1. That it is not likely that they ſpend all their ſtrength upon Cities, but do indifferently ſhake, break in ſunder, and throw down Mountains and Rocks; and ſeeing few Cities there are but have been ſhaken, and many ruined and ſubverted by them, and levelled with the Ground; there is good reaſon to think, that few Rocks or Mountains have eſcaped their Fury, but have ſuffered the like Concuſſions and Alterations.

2. That

2. That the Changes that have hitherto happened in the Earth by Earthquakes have not been ſo conſiderable as to threaten a diſſolution of the preſent Syſtem of the Terraqueous Globe, ſhould there be a like ſucceſſion of them to Eternity. Unleſs we will except that unparall'd univerſal one, which happened in the days of *Valentinian* the firſt (which we have already mention'd) by which the whole known World, both Land and Sea, and its like the then unknown too, were violently ſhaken; which might ſeem to be a Prelude to the future Conflagration or Deſtruction of the whole by ſuch a confuſion and daſhing in pieces of all the parts of it one againſt another, as the *Stoicks* ſpeak of.

Of the Effects of burning Mountains or *Vulcanos*, I have already ſaid ſomething, and ſhall afterwards, have occaſion to ſay more. In brief, 1. They caſt forth out of their Mouths, and ſcatter all over the Country, ſometimes to a very great diſtance, abundance of Sand and Aſhes. *Dion Caſſius* reports, that in that noted deflagration of *Veſuvius* in the time of *Titus* the Emperour, there was ſo much Cinders and Aſhes vomited out of its flaming Tunnel, and with that Fury and Violence, that they were tranſported over Sea into *Africa*, *Syria* and *Egypt*; and

and on the other ſide were carried as far as *Rome*, where they darkned the very Air, and intercepted the Sun-beams. At which time, by the fury of this burning and tempeſt, the whole Mountain and Earth thereabouts was ſo ſhaken, that two adjoyning Cities *Herculanium* and *Pompeii*, were deſtroyed with the People ſitting in the Theater. And the famous Natural Hiſtorian *Pliny* the Elder, then Admiral of the *Roman* Navy, out of a curioſity of ſearching out the Cauſes and Nature of the Deflagration approaching too near the Mountain, and ſtaying too long there, was ſuffocated with the ſulphureous ſmoke and ſtench thereof.

Of another eruption of the ſame *Veſuvius* we read, in the time of *Leo* the Emperour, wherein the Aſhes thereof tranſported in the Air obſcured all *Europe*, being carried as far as *Conſtantinople*; and that the *Conſtantinopolitans* being wonderfully affrighted therewith (inſomuch as the Emperour forſook the City) in memory of the ſame, did yearly celebrate the Twelfth of *November*.

2. They alſo pour out huge Floods of melted Minerals, Stones, and other Materials, running down like Rivers for many Miles together; as did the Mountain *Ætna* in that laſt and moſt famous Eructation, diſgorging ſuch mighty ſtreams of fiery running matter, as

flowed

flowed down to *Catana*, above twenty Miles diſtant, and advanced a conſiderable way into the very Sea it ſelf.

Secondly, The next thing I ſhall mention is the extraordinary Floods cauſed by long continuing ſhowers, or violent and tempeſtuous ſtorms and ſhots of rain.

The moſt ancient and memorable of this kind is that of *Deucalion*, of which we have already diſcourſed ſufficiently. S. *Hierome* in the Life of *Hilarion* (as I find him quoted by Dr. *Hakewill*) ſpeaks of a Flood and Inundation after the Death of *Julian*, in which *Naves ad prærupta montium delatæ pependerunt*, the Ships being landed upon the tops of the Mountains, there ſtuck. Which whether it proceeded from Rain, or from an Irruption of the Sea, or from both Cauſes together, he doth not ſay: but if it were literally true, and not hyperbolically exaggerated, then may ſome credit be given to what *Sabin* in his Commentaries upon *Ovid*'s *Metamorphoſis*, reports, *Ex Annalium monumentis conſtat Anno* 1460. *in Alpibus inventam eſſe Navim cum anchoris in cuniculo per quem metalla effodiuntur*: It appears by the Monuments of Hiſtory, that in the Year 1460. in a Mine of the *Alps* was found a Ship with its Anchors; in confirmation of what that Poet writes,

*Et*

*Et vetus inventa eſt in montibus anchora ſummis.*

In the Year of our Redemption 590. in the Month of *October*, *Gregory* being then Biſhop of *Rome*, there happened a marvellous overflowing in *Italy*, and eſpecially in the *Venetian* Territory and in *Liguria*, accompanied with a moſt fearful ſtorm of Thunder and Lightning, after which followed the great Plague at *Rome*, by reaſon of the many dead Serpents caſt up and left upon the Land after the Waters decreaſed and returned.

*Strozius Sigog* in his *Magia omnifaria*, telleth of an Inundation in *Italy* in the time of Pope *Damaſus*, in which alſo many Cities of *Sicily* were ſwallowed: another in the time of *Alexander* the Sixth: alſo in the Year 1515. *Maximilian* being Emperour. He alſo remembers a perillous overflowing in *Polonia* about *Cracovia*, by which many People periſhed.

Likewiſe *Vignier* a *French* Hiſtorian, ſpeaketh of a great Flood in the South part of *Languedoc*, which fell in the Year of our Lord 1557. with ſo dreadful a Tempeſt, that all the People attended therein the very end of the World and Judgment-day; ſaying, that

that by the violent deſcent of the Waters about *Niſmes*, there were removed divers old heaps and mountures of Ground, and many other Places torn up and rent; by which accident there was found both Coin of Silver and Gold, and divers pieces of Plate, and Veſſels of other Metal, ſuppoſed to be hidden at ſuch time as the *Goths* invaded that Province. Theſe ſtories related in the three laſt Paragraphs, I have borrowed of Sir *Walter Ralegh* his *Hiſtory of the World.*

To which I ſhall add one of late date happening in *Sicily*, a Narrative whereof communicated in a Letter from *Palermo*, dated *June* the 25th, 1682. I met with in the *London Gazette*, Numb. 1742. in the following words: *We have an Account from the Town of* Tortorica, *That on the ſixth Inſtant, about ſeven a Clock in the Evening, after ſo great a darkneſs that no object could be diſtinguiſhed at the diſtance of four paces, there aroſe ſuch a great ſtorm of Rain, Lightning and Thunder, which laſted ſix and thirty hours, that about One a Clock the next morning, great Torrents of Water, cauſed by theſe Rains, fell down from the neighbouring Mountains with ſo great rapidity, that they carried with them Trees of an extraordinary bigneſs, which threw down the Walls and Houſes of the Town they happened*

*pened to beat againſt. The Waters were ſo violent that they overthrew the Church of St.* Nicholas ; *and the Arch-Deacon of the Town, who retired thither, periſhed there with many other perſons: there remaining only one Abby, and about fifty Houſes, and thoſe ſo ſhattered, that they fell one after another. There were about ſix hundred of the Inhabitants drown'd, the reſt being abroad in the Field gathering their ſilk, fled to the Mountains, where they ſuffered very much for want of Proviſions. The Goods, Trees, Stone, Sand and other Rubbiſh which the Waters carried away, were in ſo great abundance, that they made a bank above the Water two Miles in length near the mouth of the River, where before the Sea was very deep. This Town is ſituate in that part of* Sicily *called the* Valley of Demona, *on the ſide of the River* Tortorica, *about five and Twenty Miles from the* Tuſcan *Sea. The Towns of* Randazzo *and* Francaville, *and ſeveral others, have likewiſe been deſtroyed by this great Flood. It is added that Mount Ætna caſts out ſuch abundance of Water, that all the neighbouring Country is drowned.* Which if it be true, ( as I ſee no reaſon to doubt it ) this is a further proof, againſt *Borellius*, that the Caverns of *Ætna* are more then ſuperficial, and reach down

down to the very Roots and Foundations of that Mountain, communicating with the Subterraneous Abyſs, and the Sea its ſelf, from whence in all likelyhood theſe Waters were derived, as is evident in thoſe poured out by *Veſuvius*.

Many other Floods we read of in Hiſtories, whether cauſed by Rains or Inundations of the Sea, is uncertain, and therefore I ſhall not ſpend time in ſetting them down. The effect of all which relating to the Earth in general is, the waſting and waſhing away of Mountains and high Grounds, the raiſing of the Valleys and Bottoms, and conſequently levelling of the Earth, and landing up of the Sea.

Thirdly, The laſt thing I ſhall mention, which hath effected conſiderable Changes in the Earth, is boiſterous and outragious Winds and Hurricanes, of which I need not give Inſtances, they every year almoſt happening. Theſe I conceive have a great Intereſt in the Inundations of the Sea we have before mentioned. Theſe raiſe up thoſe great Hills or Downs of Sand we ſee all along the Coaſts of the *Low-Countreys*, and the Weſtern-ſhores of *England*, and the like places. Theſe ſometimes blow up ſo much Sand, and drive it ſo far as to cover the adjacent Countreys, and to mar whole Fields, yea to bury Towns

and Villages. They are alſo a concurrent cauſe of thoſe huge Banks and Shelves of Sand that are ſo dangerous to Mariners, and bar up Havens, and ruin Port-Towns; of which many Inſtances might be given.

I find in Dr. *Hakewil*'s Apology, a ſtory or two ſhewing the great force and ſtrength of Winds; the one taken out of *Bellarmine*'s Book *De aſcenſu mentis in Deum per ſcal. creat. grad.* 2. *Vidi ego* (ſaith the Cardinal) *quod niſi vidiſſem non crederem, à vehementiſſimo vento effoſſam ingentem terræ molem, eámque delatam ſuper pagum quendam ut fovea altiſſima conſpiceretur, unde terra eruta fuerat, & pagus totus coopertus, & quaſi ſepultus manſerit, ad quem terra illa devenerat:* i. e. I my ſelf have ſeen, which if I had not ſeen, I ſhould not have believed, a very great quantity of Earth, digged out and taken up by the force of a ſtrong Wind, and carried up a Village thereby, ſo that there remained to be ſeen a great empty hollowneſs in the place from whence it was lifted, and the Village upon which it lighted was in a manner all covered over and buried in it.

The other out of *Stow*, who reports, That in the Year 1095. during the Reign of King *William Rufus*, there happened in *London* an outragious Wind, which bore down

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in that City alone ſix hundred Houſes, and blew off the Roof of *Bow-Church*, with which the Beams were born into the Air a great height, ſix whereof being 27 foot long, with their fall were driven 23 foot deep into the ground, the ſtreets of the City lying then unpaved.

Now then to ſum up what we have ſaid, The Changes and Alterations that have been made in the Superficial Part of the Terraqueous Globe have been effected chiefly by *Water*, *Fire*, and *Wind*. Thoſe by *Water* have been either by the Motions of the *Sea*, or by *Rains*; and both either ordinary or extraordinary: The ordinary Tides and Springtides of the *Sea* do waſh away the ſhores, and change Sand-banks, and the like. The extraordinary and tempeſtuous motions of the Sea, raiſed by raging and impetuous Winds, ſubterraneous Fires, or ſome other hidden cauſes, overwhelm Iſlands, open *Fretum's*, throw up huge beds and banks of Sand, nay vaſt baiches of Stone, extending ſome Miles, and drown whole Countreys. The ordinary *Rains* contribute ſomething to the daily diminution of the Mountains, filling up of the Valleys, and atterrating the skirts of the Seas. The extraordinary *Rains* cauſing great Floods and Deluges, have more viſible and remarkable influences upon ſuch

mutations, doing that in a few days, which the ordinary Weather could not effect, it may be, in an hundred years.

In all theſe Changes the Winds have a great intereſt; the motion of the Clouds being wholly owing to them, and in a great meaſure alſo the overflowings and inundations of the Sea.

Whatever Changes have been wrought by Earthquakes, Thunders, and Eruptions of *Vulcano's*, are the effects of Fire.

All theſe Cauſes co-operate toward the lowring of the Mountains, levelling of the Earth, ſtraitning and landing up of the Sea, and in fine compelling the Waters to return upon the dry Land, and cover the whole Surface of it, as at the firſt. How to obviate this in a natural way, I know not, unleſs by a tranſmutation of the two Elements of Water and Earth one into another, which I can by no means grant. 'Tis true indeed, the rocky parts of the Mountains may be ſo hard and impenetrable, as to reſiſt and hold out againſt all the Aſſaults of the Water, and utmoſt rage of the Sea; but then all the Earth and Sand being waſhed from them, nothing, but as it were their *Skeletons*, will remain extant above the Waters, and the Earth be in effect drowned.

But

But though I cannot imagine or think upon any natural means to prevent and put a ſtop to this effect, yet do I not deny that there may be ſome; and I am the rather inclinable ſo to think, becauſe the World doth not in any degree proceed ſo faſt towards this Period, as the force and agency of all theſe Cauſes together ſeem to require. For, as I ſaid before, the Oracle predicting the carrying on the ſhore of *Cilicia* as far as *Cyprus* by the Earth and Mud that the turbid River *Pyramus* ſhould bring down, and let fall in the interjacent ſtrait, is ſo far from being filled up, that there hath not any conſiderable progreſs been made towards it, ſo far as I have heard or read, in theſe 2000 years. And we find by experience, that the longer the World laſts, the fewer Concuſſions and Mutations are made in the upper or ſuperficial Region of the Earth; the parts thereof ſeeming to tend to a greater quiet and ſettlement.

Beſides the *Superficies* of the Sea, notwithſtanding the overwhelming and ſubmerſion of Iſlands, and the ſtraitning of it about the Outlets of Rivers; and the Earth it waſhes from the ſhores ſubſiding, and elevating the bottom, ſeems not to be raiſed higher, nor ſpread further, or bear any greater pro-

portion to that of the Land then it did a thouſand years ago.

So have I finiſhed my ſecond Diſcourſe concerning the Deluge and its Effects; and the Mutations that have been ſince made in the Earth, and their Cauſes.

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DIS-

# DISCOURSE III.

## OF THE DISSOLUTION OF THE WORLD.

### THE INTRODUCTION TO THE Third Diſcourſe.

THERE is implanted in the Nature of Man a great deſire and curioſity of fore-knowing future Events, and what ſhall befal themſelves, their

Relations and Dependents in time to come; the Fates of Kingdoms and Commonwealths, eſpecially the Periodical Mutations, and final *Cataſtrophe* of the World. Hence in ancient times, Divination was made a Science or Myſtery, and many Nations had their Colledges or Societies of Wiſe-men, Magicians, Aſtrologers and Sooth-ſayers; as for example, the *Egyptians*, *Babylonians* and *Romans*. Hence the Vulgar are very prone to conſult Diviners and Fortune-tellers.

To gratifie in ſome meaſure this Curioſity, and that his People might not in any Priviledge be inferiour to the Nations about them, it pleaſed God, beſides the ſtanding Oracle of *Urim*, not only upon ſpecial occaſions to raiſe up among the *Jews* extraordinary Prophets, by immediate Miſſion; but alſo to ſettle a conſtant Order and Succeſſion of them, for the maintenance and upholding whereof, there were Colledges and Seminaries inſtituted for the educating and fitting young Men for the Prophetick Function. Theſe were the Sons of the Prophets, of whom we find ſo frequent mention in Scripture.

Moreover, it pleaſed God ſo far to condeſcend to the weakneſs of the *Jews*, that in the Infancy of their State, he permitted them to conſult his Prophets concerning ordinary ac-

accidents of life, and affairs of ſmall moment: As we ſee *Saul* did *Samuel* about the loſs of his Fathers Aſſes: which it's not likely he would have done, had it not been uſual and cuſtomary ſo to do. In the latter times of that State, we read of no conſulting of Prophets upon ſuch occaſions. At laſt alſo by their own confeſſion, the Spirit of Prophecy was quite taken away, and nothing left them but a Vocal Oracle, which they called *Bath col*, *i.e.* the Daughter of a Voice, or the Daughter of Thunder, a Voice out of a Voice. This Dr.* *Lightfoot* thinks to have been a meer Fancy or Impoſture. *Quæ de Bath Kol referunt Judæi, ignoſcant illi mihi ſi ego partim pro fabulis habeam Judaicis, partim pro præſtigiis Diabolicis.* What the *Jews* report concerning *Bath Kol*, I beg their pardon, if I eſteem them no other then either Jewiſh Fables or Diabolical Illuſions. It is a Tradition among them, that after the death of the laſt Prophets, *Haggai*, *Zachary* and *Malachy*, the Holy Spirit departed from *Iſrael*. But why, I beſeech you, was Prophecy withdrawn, if Cœleſtial Oracles were to be continued? Why was *Urim* and *Thummim* taken away, or rather not reſtored, by their own confeſſion, after the Babyloniſh Captivity? It were ſtrange indeed, that God taking away his ordinary Oracles from a People

* *Hora Hebr. in Matth. cap. 3. v. 17.*

People ſhould beſtow upon them one more or equally noble; and that after they were extremely degenerated and fallen into all manner of Impiety, Superſtition and Hereſy, &c. And a little after, if I may freely ſpeak what I think, thoſe innumerable Stories, which every where occur [in the Jewiſh Writings] concerning *Bath Kol*, are to be reduced to two Heads: *viz.* 1. The moſt of them are meer Fables, invented in honour of this or that Rabbin, or to gain credit to ſome Hiſtory. 2. The reſt meer Magical and Diabolical Illuſions, &c.

In the Primitive Churches of Chriſtians planted by the Apoſtles, there was alſo an Order of Prophets, 1 *Cor.* 12. 28. *God hath ſet ſome in the Church, firſt Apoſtles, ſecondarily Prophets*, &c. This Spirit of Prophecy was an extraordinary and temporary Gift, as were the Gifts of Healing and Speaking with Tongues, continuing not long after the Death of the Apoſtles, and Conſignation of the Canon of Scripture. So that now we have no means left us of coming to the knowledge of future Events, but the Prophecies contained in the Writings of the Holy Penmen of Scripture, which we muſt ſearch diligently, conſider attentively, and compare together, if we deſire to underſtand any thing of what

ſhall

ſhall befal the Chriſtian Church or State in time to come.

This Text which I have made choice of for my Subject, is part of a Prophecy concerning the greateſt of all Events, the Diſſolution of the World.

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## 2 PETER iii. 11.

*Seeing then all theſe things ſhall be diſſolved, what manner of perſons ought we to be in all holy converſation and godlineſs?*

### CHAP. I.

*The Diviſion of the Words and Doctrine contained in them, with the Heads of the following Diſcourſe.*

THESE Words contain in them two Parts; 1. An Antecedent or Doctrine, *All theſe things ſhall be diſſolved.* 2. A Conſequent, or Inference thereupon, *What manner of perſons ought we to be?*

The

The Doctrine, here only briefly hinted, or ſummarily propoſed, is laid down more fully in the precedent Verſe; *But the day of the Lord will come as a thief in the night, in which the Heavens ſhall paſs away with a great noiſe, and the Elements ſhall melt with fervent heat, the Earth alſo, and the works that are therein ſhall be burnt up.*

Theſe words are by the generality of Interpreters, Ancient and Modern, underſtood of the final deſtruction or diſſolution of Heaven and Earth: in which ſenſe I ſhall chooſe rather to accept them at preſent, than with the Reverend and Learned Dr. *Hammond*, and ſome few others, to ſtem the Tide of Expoſitors, and apply them to the deſtruction of *Jeruſalem* and the Jewiſh Polity. I ſay then,

*That this World, and all things therein contained, ſhall one day be diſſolved and deſtroyed by Fire.* Doctr.

By *World* in this Propoſition *We*, and by *Heaven* and *Earth* in this place, the moſt rational Interpreters of Scripture, do underſtand only the whole *Compages* of this ſublunary World, and all the Creatures that are in it; all that was deſtroyed by the Flood in the days of *Noah*, and is now ſecured from periſh-

periſhing ſo again, that I may borrow Dr. *Hammond*'s words, in his Annotations on this place. And again, the word *Heavens* (ſaith he) being an Equivocal word, is uſed either for the ſuperiour Heavens, whether Empyreal or Ethereal, or for the ſublunary Heavens, the Air (as the word *World* is either the whole Compages of the ſuperiour and inferiour World, as the Author of the Book *De Mundo*, aſcribed falſly to *Ariſtotle*, defines Κόσμος, σύστημα ἔκ τε οὐρανοῦ καὶ γῆς καὶ τῶν ἐν τούτοις περιεχομένων φύσεων, *The Syſteme or Compages of Heaven and Earth, and the Beings therein contained*: or elſe only of the ſublunary lower World) we may here reſolve, that the Οὐρανοὶ and στοιχεῖα, Heaven and Hoſt, or Elements thereof, are litterally the ſublunary Aereal Heavens, and all that is therein, Clouds and Meteors, &c. Fowls and flying Creatures, and ſo, fit to joyn with the Earth and Works that are therein.

In proſecution of this Propoſition, and in order to the Proof and Confirmation, and likewiſe the clearing and illuſtration of it, I ſhall, (1.) Give you what I find concerning the diſſolution of the World; 1. In the Holy Scripture. 2. In Ancient Chriſtian Writers. 3. In the Heathen Philoſophers and Sages.

(2.) I

(2.) I ſhall endeavour to give ſome anſwer to theſe ſeven Queſtions, which are obvious and uſually made concerning it.

1. Whether there be any thing in Nature, which might prove and demonſtrate; or argue and infer a future Diſſolution of the World?

2. Whether ſhall this Diſſolution be brought about and effected by Natural, or by Extraordinary Means and Inſtruments; and what thoſe Means and Inſtruments ſhall be?

3. Whether ſhall the Diſſolution be gradual or ſudden?

4. Whether ſhall there be any Signs and Fore-runners of it.

5. At what Period of Time ſhall the World be diſſolved?

6. How far ſhall this Conflagration extend? Whether to the *Ethereal* Heavens, and all the Hoſt of them, Sun, Moon and Stars, or to the *Aereal* only.

7. Whether ſhall the Heavens and Earth be wholly diſſipated and deſtroyed, or only refined and purified?

CHAP.

## CHAP. II.

### *The Teſtimonies of Scripture concerning the Diſſolution of the World.*

1. THen, Let us conſider what we find delivered in the Holy Scriptures, concerning the Diſſolution of the World. And firſt of all, This place, which I have made choice of for my Text, is in my opinion the moſt clear and full, as to this particular, in the whole Scripture; and will give light for the Solution of moſt of the propoſed Queſtions. Verſ. 10. *The day of the Lord ſhall come as a thief*, &c. This anſwers the third Queſtion, Whether the Diſſolution ſhall be gradual or ſudden? *Wherein the Heavens ſhall paſs away with a great noiſe, and the Elements ſhall melt with fervent heat, the Earth alſo, and all the works that are therein ſhall be burnt up.* And again, Verſ. 12. *Wherein the Heavens being on fire ſhall be diſſolved, and the Elements ſhall melt with fervent heat.* This anſwers the ſecond Queſtion, What the Means and Inſtru-

Inſtruments of this Diſſolution ſhall be? Verſ. 13. *Nevertheleſs we according to his promiſe, look for a new Heaven and a new Earth, wherein dwelleth righteouſneſs.* This gives ſome light toward the anſwering of the laſt Queſtion, Whether ſhall the Heavens and the Earth be wholly burnt up and deſtroyed, or only renewed and purified? Theſe Words as clearly as they ſeem to refer to the Diſſolution of the World, yet Dr. *Hammond* doubts not to be underſtood of the remarkable deſtruction of *Jeruſalem* and the *Jewiſh* State, he thus paraphraſing them.

> Verſe 10. *But the day of the Lord will come as a thief in the night, in which the Heavens ſhall paſs away with a great noiſe, and the Elements ſhall melt with fervent heat, and the Earth alſo, and the works that are therein ſhall be burnt up.*

But this Judgment of Chriſt, ſo remarkable on the *Jews*, ſhall now ſhortly come, and that very diſcernably; and the Temple ſhall ſuddenly be deſtroyed, the greater part of it burnt, and the City and People utterly conſumed.

Verſe 11. *Seeing then all theſe things ſhall be diſſolved, what manner of Perſons ought ye to be in all holy converſation and godlineſs.*

Seeing then this deſtruction ſhall thus involve all, and now approacheth ſo near, what an engagement doth this lay upon us to live the moſt pure ſtrict lives that ever Men lived?

Verſe 12. *Looking for and haſtning unto the coming of the day of God, wherein the Heavens, being on fire, ſhall be diſſolved, and the Elements ſhall melt with fervent heat.*

Looking for the coming of Chriſt, for our deliverance, and by our Chriſtian lives quickning and haſtning God to delay it no longer; that Coming of his, I ſay, which as it ſignifies great mercy to us, ſo it ſignifies very ſharp deſtruction to the whole *Jewiſh* State.

Verſe 13. *Nevertheleſs we according to his promiſe, look for new Heavens and a new Earth, wherein dwelleth righteouſneſs.*

Inſtead

Inſtead of which we look for a new Chriſtian State, wherein all proviſion is made by Chriſt for Righteouſneſs to inhabit, according to the Promiſe of Chriſt concerning the Purity that he ſhould plant in the Evangelical State.

How he makes out and confirms this Paraphraſe, ſee in his *Annotations* upon this place. So confident is he of the Truth of this his Interpretation, that he cenſures the uſual one as a great Miſtake, in his *Annotation* on *verſe* 10. where he thus writes; What is here thus expreſſed by **S.** *Peter*, is ordinarily conceived to belong to the end of the World, and by others applied to the end of this World, and the beginning of the *Millennium*, or thouſand years. And ſo, as S. *Peter* here ſaith, *verſe* 16. many other places in S. *Paul's* Epiſtles, and in the Goſpel, eſpecially *Matthew* 24. are miſtaken and wreſted. That it doth not belong to either of thoſe, but to this fatal day of the *Jews*, ſufficiently appears by the purport of this whole *Epiſtle*, which is, to arm them with Conſtancy and Perſeverance till that day come; and particularly, in this Chapter, to confute them who object againſt the Truth of Chriſt's Predictions, and reſolve it ſhould not come at all: Againſt whom he here oppoſes the Certainty, the Speedineſs, and the Terrible-

neſs of its coming. That which hath given occaſion to thoſe other common Miſtakes, is eſpecially the hideouſneſs of thoſe Judgments which fell upon the People of the *Jews*, beyond all that ever before are related to have fallen upon them, or indeed any other People, which made it neceſſary for the Prophets, which were to deſcribe it (and who uſe Tropes and Figures, and not plain Expreſſions, to ſet down their Predictions) to expreſs it by theſe high Phraſes, of the *paſſing away* and *diſſolving* of *Heaven* and *Earth* and *Elements*, *&c.* which ſounding very tragically, are miſtaken for the great and final Diſſolution of the World. So far the Doctor. Two things there are in this Chapter which ſeem to contradict this Interpretation; Firſt, That the Deſtruction here ſpoken of, is compared with *Noah*'s Flood; and the Heaven and Earth to be diſſolved by this, made parallel, and of equal extent to the World deſtroyed by that. Of this the *Doctor* was well aware, and therefore grants that the ſeventh Verſe, *But the Heavens and the Earth which are now, by the ſame word are kept in ſtore, reſerved unto fire againſt the day of judgment, and perdition of ungodly men*, is to be underſtood of the general and final deſtruction of the World by fire, but the following Verſes to be an Anſwer

ſwer to the firſt part of the Atheiſts Objection, viz. *Where is the promiſe of his coming?* To me it ſeems, that all refer to the ſame matter. The ſecond thing which ſeems to contradict the *Doctor*'s Interpretation, is, the Apoſtles citing for the inſtruction and confirmation of the Believers, and in Anſwer to the Atheiſts Objection (*Where is the promiſe of his coming?*) that place of the *Pſalmiſt*, *Pſal.* 90. 4. That *one day is with the Lord as a thouſand years, and a thouſand years as one day.* For the Apoſtle ſeems to ſuppoſe, that the time of Chriſt's coming, might poſſibly be a thouſand years off; and that they were not to think much, or diſtruſt the Promiſe, if it were ſo: for though it were predicted as a thing ſhortly to come, yet they were to conſider, that a thouſand years in God's ſight is but a very ſhort time; ſo that it might be foretold as ſhortly to come, though it were a thouſand years off. Whereas it might ſeem improper to mention a thouſand years to ſupport them in expectation of an Event that was not twenty years to come.

Another place where mention is made of Chriſt's coming to Judgment, and the Diſſolution of the World, is *Matth.* 24. to which may be added as parallel *Mark* 13. and *Luke* 21. In which places you have conſiderable,

1. The Suddenneſs of Chriſt's coming, *verſe* 27. *As the lightning comes out of the Eaſt, and ſhineth even unto the Weſt, ſo ſhall the coming of the Son of Man be.* 2. The Signs of his coming, *verſe* 29. *Immediately after the tribulation of thoſe days ſhall the Sun be darkned, and the Moon ſhall not give her light, and the Stars ſhall fall from Heaven, and the powers of Heaven ſhall be ſhaken.* 3. The manner of his coming, *verſe* 30. *And then ſhall appear the ſign of the Son of Man in Heaven; and then ſhall all the Tribes of the Earth mourn, when they ſhall ſee the Son of Man coming in the Clouds of Heaven with power and great glory. And he ſhall ſend his Angels with a great ſound of a Trumpet, and they ſhall gather together his Elect from the four Winds, from one end of Heaven to the other.* 4. The uncertainty of the time of his coming, and this diſſolution as to us, *But of that day and hour knoweth no man, no not the Angels in Heaven:* and *Mark* adds, *neither the Son, but the Father only.*

All this Prophecy Dr. *Hammond* underſtands of the deſtruction of the City and Temple of *Jeruſalem*, and whole Nation of the *Jews*; as may be ſeen in his *Paraphraſe* and *Annotations* upon this place. And indeed our Saviour himſelf ſeems to limit it to this, ſaying, *verſe* 24. *Verily I ſay unto*

*to you, this generation ſhall not paſs away, till all theſe things be fulfilled.* For if theſe Prophecies look further than the deſtruction of *Jeruſalem*, even to Chriſt's coming to Judgment, how could it be true, that that generation ſhould not paſs away till all thoſe things were fulfilled? Whereas we ſee that that generation is long ſince paſſed away, and yet the end is not come? And indeed, Expoſitors that underſtand them of the end of the World, and Chriſt's ſecond coming to Judgment, are hard put to it to anſwer this Objection. *S. Chryſoſtom* will have this word γενεὰ to be underſtood not of the Generation of Men then living, but of the Generation of the Faithful, which ſhould not fail till the end of the World. Οἶδε γὰρ (ſaith he) γενεὰν οὐκ ἀπὸ χρόνων χαρακτηρίζων μόνον, ἀλλ' ἀπὸ τρόπου θρησκείας καὶ πολιτείας, ὡς ὅταν λέγῃ, Αὕτη ἡ γενεὰ ζητούντων σε, &c. *He denominates a Generation not only from living together in the ſame time, but from having the ſame form and manner of religious Worſhip and Polity; as in that place, This is the generation of them that ſeek thee, that ſeek thy face, O* Jacob. *Beza* underſtands γενεὰ of the preſent Age, and will have it to be of the ſame valor with דור in *Hebrew*, and πάντα ταῦτα to refer not to all particulars mentioned in this Chapter, but only to thoſe

which are ſpoken of the deſtruction of the City and Nation of the *Jews:* But (ſaith he) if any one urgeth the univerſal Particle, *Vertere licebit, Fiant omnia,* viz *quæ ultimam illam diem præceſſura dixit. Nam ab illo tempore cœperunt fieri, & adhuc perſeverant illa ſigna, ſuo demum tempore Filio hominis venturo.*

But on the other ſide, 1. Some paſſages there are in this Chapter, which are hardly applicable to the deſtruction of *Jeruſalem*, and the Diſſolution of the *Jewiſh* Commonwealth; as *the appearing of the Sign of the Son of Man in Heaven, and the Tribes ſeeing the Son of Man coming in the Clouds of Heaven, with power and great glory. And his ſending his Angels with a great ſound of a Trumpet.* 2. The coming of Chriſt is in like manner deſcribed in places which undoubtedly ſpeak of his coming to Judgment at the end of the World. As in 1 *Cor.* 15. 52. mention is made of the *Trumpets ſounding* at the time of Chriſt's coming: and 1 *Theſſ.* 4. 16. it is ſaid, *The Lord himſelf ſhall deſcend from Heaven with the voice of the Archangel, and with the trump of God: and* verſe 17. *We that are alive ſhall be caught up together with them* [that are riſen] *in the Clouds to meet the Lord in the Air.* All which places are perfectly parallel, and ſeem manifeſtly to allude

lude to the fore-mentioned words *Matth.* 24. 30, 31. I am apt to think that theſe Prophecies may have a double reſpect; one to the City, Temple, and Nation of the *Jews*: another to the whole World at the great Day of Doom: and that the former is indeed typical of the latter: and ſo they have a double completion; the firſt in the deſtruction of *Jeruſalem* and the *Jewiſh* Polity: In reference to which it is truly ſaid, *This Generation ſhall not paſs away till all theſe things be fulfilled.* The ſecond in the final Diſſolution of the World, which is yet to come.

But to proceed; Another place which is uſually underſtood of the Diſſolution of the World by fire, is 2 *Theſſ.* 1. 7, 8. *When the Lord Jeſus ſhall be revealed from Heaven with his mighty Angels in flaming fire*, &c. Other parallel places may be ſeen, *Rev.* 6. 12, 13, 14. *Rev.* 10. 6. *Rev.* 21. 1. *And I ſaw a new Heaven and a new Earth, for the firſt Heaven and the firſt Earth were paſſed away, and there was no more Sea*, Hebr. 12. 26, 27. Theſe places ſpeak more directly of the Diſſolution of the World, and the coming of Chriſt to Judgment. Others there are that ſpeak only concerning the time of it, 1 *Pet.* 4. 7. *But the end of all things is at hand.* James 5. 9. *Behold the Judge ſtandeth before*

*before the door.* 1 John 2. 18. *Little Children it is the laſt time*; or as ſome tranſlate it, the laſt hour, ἐσχάτη ὥρα. Hebr. 10. 37. *Yet a little while, and he that ſhall come will come, and will not tarry.* μικρὸν ὅσον ὅσον. Luke 18. 17. *I tell you he will avenge them ſpeedily.* All theſe places the forementioned Dr. *Hammond* ſtill applies to that famous Period of the deſtruction of the City, Temple and Polity of the *Jews*; only in his Note upon ὄλεθρος αἰώνιος, that everlaſting deſtruction mentioned 2 *Theſſ.* 1. 9. he hath ſome qualification, ſaying thus, *Mean while not excluding the eternal torments of Hell-fire, which expect all impenitent ſinners that thus fall, but looking particularly on the viſible deſtruction and vengeance which ſeizeth on whole Nations or Multitudes at once in this life.* And in concluſion hath left us but one place in the N. Teſtament, to prove the general Conflagration of the World, *viz.* 2 *Pet.* 7. 7.

Now becauſe ſome have been offended at theſe Interpretations of his, others have ſpoken very ſlightingly of them: I ſhall briefly ſum up what hath been alledged in defence of them by this great Man.

1. That the Prophets uſe to ſet down their Predictions in Tropes and Figures, and not in plain Expreſſions, (*their Style being Poetical.*) And therefore in deſcribing thoſe hideous

Judg-

Judgments which fell upon that People of the *Jews*, beyond all that ever before fell upon them, or indeed any other People, they found it neceſſary to employ thoſe High and Tragical Phraſes of the paſſing away and diſſolving Heaven, and Earth, and Elements. And that this was the manner of the Prophets, may be proved; becauſe we find the deſtruction of other places deſcribed in as high Strains, as lofty and tragical Expreſſions as this of *Jeruſalem*. For example, that of *Idumæa*, Iſai. 34. 9. *The ſtreams thereof ſhall be turned into pitch, and the duſt thereof into brimſtone, and the land thereof ſhall become burning pitch. It ſhall not be quenched night nor day, the ſmoke thereof ſhall go up for ever.* And in the fourth Verſe he ſeems but to Preface to this Deſtruction in theſe words, *And all the hoſt of Heaven ſhall be diſſolved, and the Heavens ſhall be rolled together as a ſcroll: and all their hoſts ſhall fall down as the leaf falleth off from the Vine, and as a falling Fig from the Fig-tree; for my Sword ſhall be bathed in Heaven: Behold it ſhall come down upon* Idumæa. And in the Burden of *Babylon*, Chap. 13. 8, 9. we have theſe words, *Behold the day of the Lord cometh, cruel both with wrath and fierce anger to lay the Land deſolate: For the Stars of Heaven and the Conſtellations*

*ſtellations thereof ſhall not give their light: The Sun ſhall be darkened in his going forth, and the Moon ſhall not cauſe her Light to ſhine.*

2. All the Predictions in that famous place, *Matth.* 24. to which all other places in the New Teſtament relating to this matter are parallel, are by our Saviour himſelf reſtrained to the deſtruction of *Jeruſalem*, and the full completion of them limited to the duration of that Age: Verſe 34. *Verily I ſay unto you, This generation ſhall not paſs till all theſe things be fulfilled.* What reaſon then can we have to extend them further.

3. In moſt of the places where this coming of Chriſt is mentioned, it is ſpoken of as near, and at hand; as in the places laſt cited. Now, (ſaith the Learned Doctor) in his Note upon *Luke* 18. 7. *I tell you he will avenge them ſpeedily.* All which, if (when it is ſaid to approach and to be at the door) it belonged to the Day of Judgment (now after ſo many hundred years not yet come) what a μακροθυμία were this? what a delaying of his coming? and conſequently, what an Objection againſt the truth of the Chriſtian Religion? As *Mahomet* having promiſed after his death he would preſently return to life, and having not performed his Pro-

Promiſe in a thouſand years is by us juſtly condemned as an Impoſtor.

4. That this place of S. *Peter*, out of which I have taken my Text, doth not belong to the end of the World, ſufficiently appears (ſaith he) by the purport of this whole Epiſtle, which is to arm them with conſtancy and perſeverance till that Day come, and particularly in this Chapter to confute them who object againſt the truth of Chriſt's Predictions, and reſolve it ſhould not come at all; againſt whom he here oppoſes the certainty, the ſpeedineſs, and the terribleneſs of its coming. And for that other famous place, 2 *Theſſ.* 1. 8, 9. that it belongs to the ſame Period; ſee how he makes it out in his Annotations.

I ſhall now ſuperadd ſome places out of the Old Teſtament, which ſeem to ſpeak of the Diſſolution of the World, *Job* 14.12. *Man lieth down and riſeth not till the Heavens be no more.* Pſal. 102. 5, 6. quoted *Hebr.* 1. 10, 11. *Of old haſt thou laid the foundations of the Earth, and the Heavens are the works of thy hands. They ſhall periſh, but thou remaineſt; and they all ſhall wax old as doth a garment, and as a veſture ſhalt thou change them, and they ſhall be changed*, Iſai. 34. 4. *And all the hoſt of Heaven ſhall be diſſolved, and the Heavens ſhall be rolled together as*

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*a ſcroll, and all their hoſt ſhall fall down as a leaf falleth from the Vine,* &c. Iſai. 51.6. *The Heavens ſhall vaniſh away like ſmoke, and the Earth ſhall wax old like a garment,* Joel 2.31. *The Sun ſhall be turned into darkneſs, and the Moon into blood, before that great and terrible day of the Lord comes.* Malachi 4.1. *Behold the day cometh that ſhall burn like an Oven,* &c. Deut. 32.22. *For a fire is kindled in my anger, and ſhall burn to the loweſt Hell, and ſhall conſume the Earth with her encreaſe, and ſet on fire the foundations of the Mountains.* I muſt confeſs that the Prophetick Books are full of figurative Expreſſions, being written in a Poetick Style, and according to the ſtrain of the Oriental Rhetorick, which is much different from the *European*, affecting lofty and tumid Metaphors and exceſſive *Hyperbola's* and Aggravations, which would either ſound harſh to our Ears, or import a great deal more to us than they did to them. This is obvious to any one that reads their Books; and may clearly be demonſtrated from the Titles that their Kings aſſumed to themſelves as well anciently as lately, *viz. Sons of the Sun, Brethren of the Sun and Moon, Partners of the Stars, Lions crowned in the Throne of the World, Endued with the ſtrength of the whole Heaven, and Virtue of the Firmament.*

Now

Now we cannot poſſibly imagine them ſo vain as to think themſelves litterally to be ſuch: no ſure, all they meant by theſe Expreſſions was that they were great, and honourable, and powerful. Now the Prophetick Books of the Old Teſtament being written in a Style ſomewhat conformable to the Oratory of thoſe Countreys,are not (I humbly conceive) in every title to be ſo exactly ſcanned and litterally expounded, but ſo to be interpreted as a *Jew* or an *Aſiatick* would then have underſtood them. And this I rather think, becauſe there be divers paſſages in the Prophets, which cannot be verified in a ſtrict literal ſenſe; as in the place before quoted, *Iſa.* 34. 9. It is ſaid of the *ſtreams of* Idumæa *that they ſhould be turned into pitch, and the duſt thereof into brimſtone; and the Land thereof ſhould become burning pitch, and ſhould not be quenched night nor day; but the ſmoke thereof ſhould go up for ever.* And of the City of *Tyre* it is ſaid, *Ezek.* 26.14. *It ſhall be built no more.* And *verſe* 19. *When I ſhall make thee a deſolate City, like the Cities that are not inhabited, when I ſhall bring up the Deep upon thee, and great waters ſhall cover thee.* And *verſe* 21. which is thrice repeated, *I will make thee a terror, and thou ſhalt be no more: though thou be ſought for, thou ſhalt never be found again*

*again, ſaith the Lord God.* And yet we ſee that the City of *Tyre*, though it was indeed wholly diſ-peopled at that time, the Inhabitants transferring themſelves into *Africa*, when it was beſieged by *Nebuchadnezzar*; yet was it afterward peopled again, and continues a City inhabited to this day. And of *Babylon*, it is ſaid that *there ſhould none remain in it, neither man nor beaſt, but that it ſhould be deſolate for ever*, Jer. 51.62. Iſai. 13. 20. and of the Land of *Babylon*, Verſ. 29. *that it ſhould be a deſolation without an Inhabitant.* And though indeed this Propheſy was, I think, as to the City, at laſt verified in the Letter; yet did *Babylon* long continue a great City after this Propheſy: And the Land of *Babylon* is now inhabited, there being at this day a great City not far from the place where *Babylon* ſtood. So that theſe places import no more, then that there ſhould be a very great Deſtruction and Devaſtation of thoſe Cities and Countries. As for thoſe places in the Old and New Teſtament, wherein mention is made of the laſt Days and the laſt Times, it is clear that they are to be underſtood of the Age of the Meſſiah, all the time from the Exhibition of the Meſſiah to the end of the World. *Iſaiah* 2. 1. *And it ſhall come to paſs in the laſt days, that the Mountain of the Lords Houſe ſhall be eſtabliſhed*

*bliſhed in the top of the Mountains, and ſhall be exalted above the Hills, and all Nations ſhall flow to it*; which very words we have repeated *Michah* 4. 1. So in that Propheſie of *Joel* 2. 28. quoted *Acts* 2. 17. *And it ſhall come to paſs in the laſt days, ſaith God, I will pour out of my Spirit upon all fleſh*, &c. it is clear the laſt days are to be underſtood. The Apoſtle *Peter* interpreting the Propheſie, (*verſe* 16.) of the *gift of Tongues* beſtowed upon the Diſciples at that time. Hence the *laſt Days* have among the *Jews* proverbially ſignified the days of the Meſſiah, as Doctor *Hammond* in his Annotations upon this place tells us; who alſo notes, that in that place of *Joel the laſt days* do literally ſignifie the laſt days of the *Jews*, immediately preceding their deſtruction, called there the *great and terrible day of the Lord*. So *Hebr.* 1. 2. by ἐπ' ἐσχάτων τῶν ἡμερῶν τούτων, *in theſe laſt days* is meant the days of the Meſſias. So 1 *Pet.* 1. 20. 2 *Pet.* 3. 3. 1 *Tim.* 4. 1. 2 *Tim.* 3. 1. mention is made of *the laſt days* in this ſenſe. In like manner the end of the World, συντέλεια τῶν αἰώνων, Hebr. 9. 26. *But now once in the end of the world hath he appeared to put away ſin by the Sacrifice of himſelf.* And τὰ τέλη τῶν αἰώνων the Ends of the World, in 1 *Cor.* 10. 11. *Upon whom the Ends of the World are come*, ſig-

nifie the Age of the Meſſias, though indeed the former ſeems more peculiarly to denote the ſhutting up of the Jewiſh Age or Oeconomy.

## CHAP. III.

### *The Teſtimonies of the Ancient Fathers and Doctors of the Church, concerning the Diſſolution of the World.*

2. I Proceed now to what the Ancient Fathers of the Church and Chriſtian Writers have delivered concerning the Diſſolution of the World.

That there ſhould be a Diſſolution of this World, and that it ſhall be by Fire, is ſo certain and clear among them, that it would be ſuperfluous to cite Particulars to prove it: nay, ſo general and unanimous is the conſent of all Chriſtians in this Point, that, as *Origen* obſerves in his third περὶ Ἀρχῶν, and the Learned Doctor *Hakewill* after him, whereas there can hardly be named any Article of our Faith, which ſome Hereticks have not preſumed to Impugne or call in Queſtion,

Queſtion, yet not any to be met with who queſtion this; but herein all agree, being compelled (ſaith *Origen*) by the Authority of the Scriptures. As for the time of this Diſſolution the ancient Chriſtians held it to be at hand, as might eaſily be proved by many Teſtimonies, were it not granted on all hands. And here it may be worth the obſerving, that the longer the World ſtood, the further off generally have Chriſtians ſet the Day of Judgment, and end of it. Many of the Ancients did conceive, that the Diſſolution ſhould be at the end of ſix thouſand years. As for Example, *Juſtin Martyr* in *Quæſt. & Reſp. ad Orthodoxos*, if he be the Author of that Piece, where this Queſtion (*When the end of the World ſhould be?*) being put, the Anſwer is, Ἔνεστι δὲ πολλῶν γραφικῶν μαρτυριῶν, &c. *We may rationally conjecture and conclude from many Scripture Expreſſions, that they are in the right who ſay that the World will laſt ſix thouſand years. For in one place it ſaith,* In theſe laſt days; *and in another,* Upon whom the Ends of the World are come; *and in a third,* When the fulneſs of time was come. *Now it is evident that theſe things were ſpoken in the ſixth Millenary.*

*Irenæus adv. hæreſ. lib. 5. cap. ult.* Who gathers ſo much from the Similitude of the ſix days Creation, after which ſix days was the Sabbath, that is, the day of Reſt; *Hoc autem* (ſaith he) *eſt & præteritorum narratio, & futurorum prophetia. Dies enim unus mille annos ſignificabat, ſicut Scriptura teſtatur*; * *Mille anni ante Dominum ſicut Dies unus: ergo ſicut conſummatus fuit mundus in ſui creatione intra ſex dierum ſpatium, & poſtea quies; ſic in ſui fine conſummabitur intra ſpatium ſex millium annorum, deinde vera & perpetua quies ſubſequetur.* This is both a Narration or Hiſtory of what is paſt, and a Propheſie of things to come. For one day ſignified a thouſand years, as the Scriptures teſtifie, *A thouſand years in the ſight of God are but as one day.* Therefore as the World at the firſt Creation was conſummated in the ſpace of ſix days, and afterwards followed the Sabbath or Reſt; ſo in the end its duration ſhall be conſummated within the ſpace of ſix thouſand years; and then ſhall follow the true and perpetual Reſt.

* 2 Pet 3.

To theſe I might add *Lactantius*, in his Seventh Book of Inſtitut. *cap.* 14. who uſeth the ſame *Argument* with *Irenæus*, *Ergo quoniam ſex diebus cuncta Dei opera perfecta ſunt: per ſecula ſex, id eſt, ſex annorum millia manere in hoc ſtatu mundum neceſſe eſt.*

*Dies*

*Dies enim magnus Dei mille annorum circulo terminatur, ſicut indicat Propheta, qui dicit, Ante oculos tuos, Domine, mille anni tanquam dies unus,* &c. *Therefore becauſe all the works of God were perfected (or finiſhed) in ſix days, it is neceſſary (or neceſſarily follows) that the World ſhall continue in this ſtate ſix Ages, that is ſix thouſand years. For the great Day of God is terminated in a Circle of ſix thouſand years; as the Prophet intimates, who ſaith, A thouſand years in thy ſight, O Lord, are but as one day. S. Auguſtine l. 20. de Civitate Dei. S. Hieronymus Comment. in Mich. cap. 4* Moſt clear and full to this purpoſe is *Euſtath.* in his Comment. in *Hexaemeron* Λογιζόμεθα γὰρ διαμένειν τὸν κόσμον, &c. *We reckon* (ſaith he) *that the Creation ſhall continue till the end of the ſixth Chiliad, becauſe God alſo conſummated the Univerſe in ſix days; and I ſuppoſe that the Deity doth account days of a thouſand years long; for that it is ſaid,* A thouſand years are in the ſight of the Lord as one day. Howbeit the moſt of them did not propoſe this Opinion as an undoubted Truth, but only as a modeſt Conjecture. And S. *Auſtine* is very angry with them, who would peremptorily conclude from ſo ſlight an Argumentation.

This Conceit is already confuted, and the World hath long outlaſted this term, according

ing to their Computation who followed the *Septuagint* or *Greek* account, and reckoned that *Phaleg* lived about the Three thousandth year of the World, and had his Name from his living in the division of Time, there being to come after him Three thousand years, that is, just so many as were past before him.

As concerning the future Condition of the World after the Conflagration, I find it the general and received Opinion of the ancient Christians, that this World shall not be annihilated or destroyed, but only renewed and purified. So *Eusebius*, Οὐ παντελῶς πρὸς φθορὰν ὁ κόσμος χωρήσει, ἀλλὰ πρὸς ἀνακαινισμόν. *The World shall not be wholly destroyed, but renewed.* Divers other passages I might produce out of him to the same purpose: *Cyril* of *Jerusalem* Catech. 15. Ἑλίσσει δὲ τοὺς οὐρανοὺς οὐκ ἵνα ἀπολέσῃ τούτους, ἀλλ' ἵνα καλλίονας ἐγείρῃ. He folds up the Heavens, not that he might destroy them, but that he might rear them up again more beautiful. Again, *Cyril* upon this place, θάνατον δὲ τῶν στοιχείων εὐφυῶς ὀνομάζει τὴν εἰς τὰ ἀμείνω μεταβολὴν, &c. *He acutely or ingeniously calls the death of the Elements their change into better.* So that this Renovation in respect of the Creation shall be such a kind of thing as the Resurrection in reference to

Man's

Man's Body. *Oecumenius* upon this place, He ſaith, *new Heavens* and a *new Earth*, οὐκ ἑτέραν δὲ τῇ ὕλῃ, yet not different in matter. And again, οὐκ εἰς ἀφανισμὸν ἀλλ' εἰς κάθαρσιν. They ſhall not be deſtroyed or annihilated, but only renewed and purified. And upon *Revel.* 21. 2. Τοῦτο δὲ τὴν ἀνυπαρξίαν δηλοῖ ἡ λύσις, ἀλλὰ τὴν ἀναλαμψιν. This he ſaith, not denoting the Non-exiſtence of the Creation, but the Renewing. In this manner he expounds *Pſalm* 102. 5, 6. and proceeding, ſaith, We may here take notice, that the Apoſtle doth not uſe the word ἀπόλλυσιν, as if the Heaven and Earth were annihilated and brought to nothing, but μεθίσι, they paſſed away or removed, or changed ſtate. Saint *Hierome* upon the Pſalms, *Pſalm* 102. ſaith, *Ex quo oſtenditur perditionem cœlorum non interitum ſonare, ſed mutationem in melius. From which words* [ as a Veſture ſhalt thou change them ] *may be ſhewn and made out, that the Diſſolution of the Heavens doth not ſignifie their utter deſtruction or annihilation, but only their change into a better ſtate.* I might add abundance more Teſtimonies, but theſe I think may ſuffice.

## CHAP. IV.

### *The Opinions of the Ancient Heathen Philoſophers, and other Writers concerning the Diſſolution.*

3. IT follows now that I give you an account what the ancient Philoſophers and Sages among the Heathens thought and delivered concerning this Point. Two of the four principal Sects of Philoſophers held a future Diſſolution of the World, *viz.* The *Epicureans* and *Stoicks*.

As for the *Epicureans*, They held that as the World was at firſt compoſed by the fortuitous concourſe of Atomes, ſo it ſhould at laſt fall in pieces again by their fortuitous Separation, as *Lucretius* hath it, *lib.*5.

*Principio maria ac terras cœlúmque tuere,*
*Horum naturam triplicem, tria corpora, Memmi,*
*Tres ſpecies tam diſſimiles, tria talia texta*
*Una dies dabit exitio, multóſque per annos*
*Suſtentata ruet moles & machina mundi.*

But

But now to prove all this; firſt caſt an Eye,
And look on all below, on all on high,
The ſolid Earth, the Seas, and arched Sky:
One fatal hour muſt ruine all,
This glorious Frame, that ſtood ſo long, muſt fall.

This Opinion of theirs is conſonant enough to their wild Principles, ſave only in that point of its ſuddenneſs, *Una dies dabit exitio*, &c. one day ſhall deſtroy or make an end of it.

The *Stoicks* were alſo of Opinion that the World muſt be diſſolved, as we may learn from the Seventh Book of *Laertius* in the Life of *Zeno*, Ἀρέσκει δὲ αὐτοῖς, &c. They hold that the World is corruptible for theſe Reaſons; 1. Becauſe it was generated, and had a beginning. 2. Becauſe That is corruptible in the whole, whoſe parts are corruptible: But the parts of the World are corruptible, being daily tranſmuted one into another. 3. That which is capable of Mutation from better to worſe is corruptible. But ſuch is the World; ſometimes being afflicted with long Heats and Droughts, ſometimes with continued Showers and Inundations. To thoſe we may add 4. according to ſome of their Opinions, Becauſe the Sun and Stars

Stars being fed with Vapours exhaled from the Earth, all the moiſture will at length be drawn out, and the World fly on fire. They were afraid * *Nè humore omni conſumpto totus mundus igneſceret.* The Poet *Lucan*, who ſeems to be of the *Stoick* Sect, in the beginning of his firſt Book, deſcribing the Diſſolution of the World, makes it to be a falling in pieces of the whole Frame of Heaven and Earth, and a jumbling and confounding of all their parts together.

* Minut. Felix.

——*Sic cùm compage ſoluta*
*Secula tot mundi ſuprema coegerit hora;*
*Antiquum repetent iterum Chaos omnia; miſtis*
*Sydera ſyderibus concurrent; ignea Pontum*
*Aſtra petent, tellus extendere litora nolet,*
*Excutiètque fretum; fratri contraria* Phœbe
*Ibit, & obliquum bigas agitare per orbem*
*Indignata diem poſcet ſibi; totáque diſcors*
*Machina divulſi turbabit fœdera mundi.*

— So when the laſt hour ſhall
So many Ages end, and this disjointed, All
To *Chaos* back return: then all the Stars ſhall be
Blended together, then thoſe burning Lights on high

In

In Sea ſhall drench, Earth then her ſhores
ſhall not extend,
But to the Waves give way, the Moon her
Courſe ſhall bend
Croſs to her Brothers, and diſdaining ſtill
to drive
Her Chariot wheel athwart the heavenly
Orb, ſhall ſtrive
To rule the day; this Frame to diſcord bent
The Worlds Peace ſhall diſturb, and all in
ſunder rent.

This Diſſolution of the World they held ſhould be by Water and by Fire alternately at certain periods, but eſpecially by Fire, which they call ἐκπύρωσιν. *Philo*, Οἱ δὲ Στωϊκοὶ τὴν φθορᾶς τοῦ κόσμου αἰτίαν φασὶ τὴν ὑπαρχουσαν ἐν τοῖς οὖσι πυρὸς ἀκαμάτου, δυνάμιν, χρόνων μακρῶν περιόδοις ἀναλύσασαν τὰ πάντα εἰς ἑαυτήν. The *Stoicks* ſay that the cauſe of the deſtruction of the World is the irreſiſtible force of Fire that is in things, which in long periods of time conſumes and diſſolves all things into it ſelf. *Euſeb. Præp. l.* 15. Ἀρέσκει δὲ τοῖς πρεσβύτατοις τῶν ἀπὸ τῆς αἱρέσεως, διαφθαρῆναι πάντα καθ' ὡρισμένους τινὰς μεγίστους περιόδους εἰς πῦρ αἰθερῶδες ἀναλυομένων πάντων. *The moſt ancient of that Sect held, That at certain vaſt Periods of time all things were rarified into Air, being reſolved into an Ethereal Fire.*

This

This Ἐκπύρωσις of the *Stoicks* we find mentioned by many, both Chriſtian and Heathen Writers, as beſides the fore-quoted *Minutius Felix*, *Juſtin Martyr*, *Clemens Alexandrinus in 5. Strom.* *Plutarch*, *Seneca*, and others. The time of this Conflagration *Seneca* determines not, but ſaith only, it ſhall be when God pleaſes. 3 *Quæſt. nat. cap.* 20. 8. *Cùm Deo viſum, vetera finire, ordiri meliora; When it ſhall ſeem good to God to put an end to old things, and to begin better.* Some there be who tell us of the *Annus Platonicus* or *magnus*, by which they underſtand ſuch a period of time, as in which all the heavenly Bodies ſhall be reſtored to the ſame ſite and diſtance they were once in, in reſpect of one another: As ſuppoſing that all the Seven Planets were at the moment of Creation in the firſt degree of *Aries*, till they come all to be in the ſame degree again, all that ſpace of time is called the Great Year, *Annus magnus:* In this Year they tell us that the height of Summer is the Conflagration, and the depth of Winter the Inundation; and ſome Aſtrologers have been ſo vain as to aſſign the time both of the Inundation and Conflagration, *Seneca* 3 *Queſt. Nat. cap.* 20. *Beroſus, qui Belum interpretatus eſt, dicit, curſa iſta ſyderum fieri, & adeò quidem affirmat, ut conflagrationi atque diluvio tempus aſſignet. Arſura e-*

*nim*

*nim terrena contendit, quando omnia ſydera in Cancro convenerint: inundationem futuram, quando eadem ſyderum turba in Capricorno convenerit.* Beroſus, *who interpreted* Belus, *ſaith, That thoſe things come to paſs according to the courſe of the Stars: and he ſo confidently affirms it, that he aſſigns the time both for the Conflagration and Inundation. For that all earthly Bodies will be burnt up, when all the Stars ſhall meet in* Cancer; *and the Inundation will fall out, when the ſame ſhall be in conjunction in* Capricorn. Concerning the manner of this Conflagration, they held it ſhould be ſudden. *Senec. Natura ſubitò ad ruinam, & toto impetu ruit; licet ad originem parcè utatur viribus, diſpenſétque ſe incrementis fallacibus. Momento fit cinis, diu ſylva,* &c. *Nature doth ſuddenly and with all its force ruſh on to ruin, though to the riſe and formation of things it uſeth its ſtrength ſparingly, diſpenſing its influence, and cauſing them to grow by inſenſible degrees; a Wood is long in growing up, but reduced to Aſhes almoſt in a moment.* And ſome of them were ſo abſurd as to think, that the Stars ſhould juſtle and be daſhed one againſt another *Senec. lib. de conſolatione ad Marciam: Cùm tempus advenerit: quo ſe mundus revocaturus extinguat, viribus iſta ſe ſuis cædent; & ſydera ſyderibus incurrent; & omni flagrante materia,*

*teria, uno igne, quicquid nunc ex diſpoſito lucet ardebit. When the time ſhall come that the World, again to reſtore and renew it ſelf, ſhall periſh, theſe things ſhall batter and mall themſelves by their own ſtrength, the Stars ſhall run or fall foul upon one another, and all the matter flaming whatſoever now according to its ſettled order and diſpoſition ſhines, ſhall then burn in one fire.* Here by the way we may with Dr. *More* [*Souls Immortality, lib.* 3. *cap.* 18.] take notice how courſly, not to ſay ridiculouſly, the *Stoicks* Philoſophize, 'when they are turned out of their Road-'way of Moral Sentences, and pretend to 'give an account of the Nature of Things. 'For what Errours can be more groſs than 'they entertain of *God*, of the *Soul*, and of 'the *Stars*; they making the two former 'Corporeal Subſtances, and feeding the lat-'ter with the vapours of the Earth, affirm-'ing that the Sun ſups the Water of the 'great Ocean to quench his Thirſt, but that 'the Moon drinks off the leſſer Rivers and 'Brooks, which is as true as that the Aſs 'drank up the Moon. Such conceits are 'more fit for *Anacreon* in a drunken Fit to 'ſtumble upon, who to invite his Compa-'nions to Tiple, compoſed that Catch,

Πίνε

Πίνει θάλασσα δ' ἀέρας,
Ὁ δ' ἥλιος θάλασσαν.

*The Sea drinks up the Vapours,*
*And the Sun the Sea.*

'then to be either found out or owned by a 'ſerious Philoſopher. And yet *Seneca* migh-'tily triumphs in this Notion of ſoddering 'the Stars with the thick Fogs of the Earth, 'and declares his Opinion with no mean 'Strains of Eloquence, *&c.*

As for the extent of this Conflagration, they held that not only the Heavens ſhould be burnt, but that the Gods themſelves ſhould not eſcape Scot-free. So *Seneca*, *Reſoluto mundo, & Diis in unum confuſis. When the World ſhall be diſſolved, and the Gods confounded and blended together into one.* And again, *Atque omnes pariter Deos Perdet nox aliqua & Chaos. And in like manner a certain Night and Chaos ſhall deſtroy all the Gods.* Is not this wiſe Philoſophy? If their Morality were no better than their Phyſicks, their *Wiſe man* they boaſt of might be ſo denominated κατ' ἀντίφρασιν, as they of *Gotham*.

But let us look a little further, and we ſhall find that the *Stoicks* were not the firſt Authors of this Opinion of the Conflagration;

on; but that it was of far greater Antiquity than that Sect. Others of the more ancient Philoſophers having entertained it, *viz. Empedocles*, as *Clemens Alexandrinus* teſtifies in his 5 *Strom.* ὡς ἐσομένης ποτὲ εἰς τὸ τοῦ πυρὸς εἶδος μεταβολῆς. *That there ſhall ſometime be a change of the World into the nature or ſubſtance of Fire.* 2. *Heraclitus*, as the ſame *Clemens* ſhews at large out of him in the ſame place, ὅπως ὁ πάλιν ἀναλαμβάνει τὰ ἐκπυρώσεις, &c. And *Laertius* in the Life of *Heraclitus*, He taught ἕνα εἶναι τὸν κόσμον, γινεσθαί τε αὐτὸν ἐκ πυρὸς, καὶ πάλιν ἐκπυροῦσθαι κατὰ τινὰς περιόδους ἐναλλὰξ τὰ σύμπαντα αἰῶνα. *That there is but one World, and that it was generated out of Fire, and again burnt up or turned into Fire at certain periods alternately throughout all Ages.* I might add to theſe the Ancient *Greek* Poets, *Sophocles* and *Diphilus*, as we find them quoted by *Juſtin Martyr* and *Clemens Alexandrinus*. Neither yet were theſe the firſt Inventers and Broachers of this Opinion, but they received it by Tradition from their Forefathers, and look'd upon it as an Oracle and Decree of Fate. *Ovid* ſpeaks of it as ſuch in the firſt of his *Metamorphoſis*;

*Eſſe*

*Eſſe quoque in fati reminiſcitur, affore tempus,*
*Quo mare, quo tellus, correptáque regia cœli*
*Ardeat, & mundi moles operoſa laboret.*

——Beſides by Doom
Of certain Fate, he knew the time ſhould come,
When Sea, Earth, raviſht Heaven, the curious Frame
Of this Worlds Maſs ſhould ſhrink in purging Flame.

And *Lucan* *; * Lib. 7.

*Hos* Cæſar, *populos ſi nunc non uſſerit ignis,*
*Uret cum terris, uret cum gurgite ponti:*
*Communis mundo ſupereſt rogus oſſibus Aſtra*
*Miſturus.*——

If now theſe Bodies want their Fire and Urn,
At laſt with the whole Globe they'll ſurely burn;
The World expects one general Fire: and Thou
Muſt go where theſe poor Souls are wandring now.

Now though ſome are of Opinion that by

*Fata* here are to be understood the *Sibylline Oracles*, and to that purpose do alledge some Verses out of those extant under that Title, as *Lactantius* in his Book *De ira Dei*, *cap.*23.

Καί ποτε τὴν ὀργὴν θεὸν οὐκέτι πραΰνοντα,
Ἀλλ' ἐξεμβρίθοντα, καὶ ἐξολύοντά τε γένναν
Ἀνθρώπων ἅπασαν ὑπ' ἐμπρησμοῦ πέρθοντα.

*And it shall sometime be, that God not any more mitigating his Anger, but aggravating it, shall destroy the whole Race of Mankind, consuming it by a conflagration.*

And in another place there is mention made, of a River of Fire that shall descend from Heaven, and burn up both Earth and Sea.

*Tunc ardens fluvius cœlo manabit ab alto*
*Igneus, atque locos consumet funditus omnes,*
*Terrámque, Oceanúmque ingentem, & cærula ponti,*
*Stagnáque, tum fluvios, fontes, Ditémque severum,*
*Cœlestémque polum, cœli quoque lumina in unum*
*Fluxa ruent, formâ deletâ prorsus eorum,*
*Astra cadent, etenim de cœlo cuncta revulsa.*

Then

Then ſhall a burning Flood flow from the
Heavens on high,
And with its fiery Streams all places utterly
Deſtroy, Earth, Ocean, Lakes, Rivers, Fountains, Hell,
And heavenly Poles, the Lights in Firmament that dwell,
Loſing their beauteous Form ſhall be obſcur'd, and all
Raught from their places, down from Heaven to Earth ſhall fall.

Now becauſe the Verſes now extant under the Name of *Sibylline Oracles* are all ſuſpected to be falſe and *Pſeudepigrapha*; and many of them may be demonſtrated to be of no greater Antiquity than the Emperour *Antoninus Pius* his Reign: and becauſe it cannot be proved, that there was any ſuch thing in the Ancient genuine *Sibylline Oracles*; I rather think, (as I ſaid before) that it was a Doctrine of ancient Tradition, handed down from the firſt Fathers and Patriarchs of the World. *Joſephus* in his *Antiquities* runs it up as high as *Adam*; from whom *Seth* his Son received it; his Father, ſaith he, foretelling him, ἀφανισμὸν τῶν ὅλων ἔσεσθαι, τὸ μὲν κατ' ἰσχὺν πυρὸς, τὸ δὲ κατὰ βίαν καὶ πλήθος ὕδατος. that there ſhould be a deſtruction of the U-

niverſe, once by the violence of Fire, and again by the force and abundance of Water; in conſequence whereof he erected two Pillars, one of Brick, which might endure the Fire, and another of Stone, which would reſiſt the Water; and upon them engraved his Aſtronomical Obſervations, that ſo they might remain to Poſterity: And one of theſe Pillars, he ſaith, continued in *Syria* until his days. Whether this Relation be true or not, it may be thence collected, that this was an Univerſal Opinion, received by Tradition, both among *Jews* and Gentiles, That the World ſhould one day be conſumed by Fire. It may be proved by good Authority, that the ancient *Gaules*, *Chaldæans* and *Indians* had this Tradition among them: which they could not receive from the *Greek* Philoſophers or Poets, with whom they had no entercourſe; but it muſt in all probability be derived down to both from the ſame Fountain and Original; that is, from the firſt Reſtorers of Mankind, *Noah* and his Sons.

I now proceed to the Third Particular propoſed in the beginning; that is, to give anſwer to the ſeveral Queſtions concerning the Diſſolution of the World.

CHAP.

## CHAP. V.

### *The first Question concerning the World's Dissolution, Whether there be any thing in Nature that may probably cause or argue a future Dissolution? Three probable Means propounded and discussed.*

### SECT. I.

*The Waters again naturally overflowing and covering the Earth.*

THE First Question is, Whether there be any thing in Nature, which may prove and demonstrate, or probably argue and infer a future Dissolution? To which I answer, That I think there is nothing in Nature which doth necessarily demonstrate a future Dissolution: but that Position of the *Peripatetick* Schools may, for ought I know, be true Philosophy, *Posito ordinario Dei concursu mundus posset durare in æternum. Supposing the ordinary concourse of God* [with second

cond Cauſes] *the World might endure for ever.* But though a future Diſſolution by Natural Cauſes, be not demonſtrable; yet ſome poſſible, if not probable, Accidents there are, which, if they ſhould happen, might infer ſuch a diſſolution. Thoſe are Four: The poſſibility of

1. The Waters again overflowing and covering the Earth.
2. The Extinction of the Sun.
3. The Eruption of the *Central Fire* encloſed in the Earth.
4. The Drineſs and Inflammability of the Earth under the Torrid Zone, and the Eruption of all the *Vulcano's* at once.

But before I treat of theſe, it will not be amiſs, a little to conſider the old Argument for the Worlds Diſſolution, and that is, its daily Conſeneſcence and Decay: which, if it can be proved, will in proceſs of time, neceſſarily infer a Diſſolution. For as the Apoſtle ſaith in another caſe, *That which decayeth and waxeth old is ready to vaniſh away*, Hebr. 8. 13. That which continually waſtes, will at laſt be quite conſumed: that which daily grows weaker and weaker, will in time loſe all its force. So the Age, and Stature and Strength of Man, and all other Animals, every Generation decreaſing, they will in the end come to nothing. And that all theſe, and all other things

things do ſucceſſively diminiſh and decay in all Natural Perfections and Qualities, as well as Moral, hath been the received Opinion, not only of the Vulgar, but even of Philoſophers themſelves from Antiquity down to our times. *Plin. Nat. Hiſt. l. 7. c. 16. In plenum autem cuncto mortalium generi minorem indies menſuram ſtaturæ propemodum obſervatur: raroſque patribus proceriores conſumente ubertatem ſeminum exuſtione; in cujus vices nunc vergat ævum. In ſum; It is obſerved that the meaſure of the ſtature of all Mankind decreaſes and grows leſs daily: and that there are few taller then their Parents; the burning (to which the Age inclines) conſuming the Luxury of the Seeds.*

*Terra malos homines nunc educat atque puſillos.*
Juvenal. Sat.

*The Earth now breeds Men bad and ſmall.*

And *Gellius Noct. Att. lib. 3. c. 10. Et nunc quaſi jam mundo ſeneſcente rerum atque hominum decrementa ſunt. And now, as if the World waxed old, there is a decrement or decay both of Things and Men* I might accumulate places out of the Ancients and Moderns to this purpoſe, but that hath been already done by others.

But this Opinion, how general ſoever it was formerly, was inconſiderately and without ſufficient ground, taken up at firſt; and afterwards without due examination embraced and followed; as appears by Dr. *Hakewil's Apology*, wherein it is ſo fundamentally confuted; that it hath ſince been rejected by all conſiderate Perſons. For that Author hath at large demonſtrated, that neither the pretended decay of the Heavenly Bodies in regard of Motion, Light, Heat or Influence; or of any of the Elements: neither the pretended decay of Animals, and particularly and eſpecially of Mankind, in regard of Age and Duration, of Strength and Stature, of Arts and Wits, of Manners and Converſation, do neceſſarily infer any decay in the World, or any tendency to a Diſſolution. For though there be at times great Changes of Weather, as long continuing Droughts, and no leſs laſting Rains; exceſſive Floods and Inundations of the Sea; prodigious Tempeſts and Storms of Thunder, Lightning and Hail; which ſeem to threaten the ruin of the World; violent and raging Winds, Spouts and Hurricanes, which turn up the Sea to the very bottom, and ſpread it over the Land; formidable and deſtructive Earthquakes, and furious Eruptions of *Vulcano's* or burning Mountains, which waſte the Country far and wide, overwhelming

whelming or ſubverting great Cities, and burying the Inhabitants in their ruins, or as the Scripture ſpeaks, *Making of a City a heap, of a defenced City a ruin.* Though theſe and many other Changes do frequently happen, at uncertain Seaſons as to us, yet are they ſo ordered by the wiſe Providence of the Almighty Creatour and Governour of the World, as nearly to balance one another, and to keep all things in an *Æquilibrium*; ſo that as it is ſaid of the Sea, that *what it gains in one place, it loſes in another*, it may be ſaid proportionably of the other Elements and Meteors; That, for Example, a long Drought in one Place is compenſated probably at the ſame time by as long a Rain in another; and at another time, the Scene being changed, by as durable a Drought in this, as laſting a Rain in that. The ſame may be ſaid of violent and continuing Heats and Colds in ſeveral Places, that they have the like Viciſſitudes and Changes, whereby in the whole they ſo balance and counterpoiſe one another, that neither prevails over other, but continue and carry on the World as ſurely and ſteddily, as if there were no ſuch Contrarieties and Fights, no ſuch Tumults and Commotions among them. The only Objection againſt this Opinion, is the Longævity of the *Antediluvian* Patriarchs, and of ſome alſo

alſo (I mean the firſt) of the *Poſtdiluvian*. For immediately after the Flood the Age of Man did gradually decreaſe every Generation in great proportions: ſo that had it continued ſo to do at that rate, the Life of Man had ſoon came to nothing. Why it ſhould at laſt ſettle at Threeſcore and ten Years, as a mean Term; and there continue ſo many Ages, without any further Change and Diminution, is, I confeſs, a Myſtery too hard for me to reveal: However, there muſt be a great and extraordinary Change at the time of the Flood, either in the Temperature of the Air, or Quality of the Food, or in the Temper and Conſtitution of the Body of Man, which induced this decrement of Age. That the Temper and Conſtitution of the Bodies of the *Antediluvians* was more firm and durable than that of their Poſterity after the Flood: and that this Change of Term of Life was not wholly to be attributed to Miracle, may both be demonſtrated from the gradual decreaſe of the Age of the *Poſtdiluvians*. For had it been miraculous, why ſhould not the Age of the very firſt Generation after the Flood have been reduced to that Term? And what account can we give of their holding out for ſome Generations againſt the Inconveniencies of the Air, or deteriority of Diet, but the ſtrength

ſtrength and firmneſs of their Conſtitutions? which yet was originally owing to the Temperature of the Air, or Quality of their Diet, or both; ſeeing a Change in theſe (for there was no other viſible Cauſe) did by degrees prevail againſt, and impair it. What influence the lying ſo long of the Water upon the Earth might have upon the Air and Earth, in changing them for the worſe, and rendring them more unfit for the maintenance and continuance of Humane Life, I will not now diſpute. But whatever might be the Cauſe of the Longævity of the *Antediluvians*, and the contracting of the Age of the *Poſtdiluvians*, it is manifeſt, that the Age of theſe did at the laſt ſettle, as I ſaid, at or about the Term of Threeſcore and ten, and hath there continued for Three thouſand years without any diminution.

I proceed now to the Accidents which might poſſibly, in proceſs of Time, infer a Diſſolution of the World.

1. The poſſibility of the Water in proceſs of Time again overflowing and covering of the Earth.

For, firſt of all, the Rains continually waſhing down and carrying away Earth from the Mountains, it is neceſſary, that as well the height as the bulk of them that are not wholly

wholly rocky, ſhould anſwerably decreaſe; and that they do ſo, is evident in Experience. For, as I have elſewhere noted, I have been informed by a Gentleman of good Credit, that whereas the Steeple of *Craich* in the *Peak* of *Derbyſhire*, in the memory of ſome old Men then living [1672.] could not have been ſeen from a certain Hill lying between *Hopton* and *Wirkſworth*, now not only the Steeple, but a great part of the Body of the Church may from thence be ſeen; which comes to paſs by the ſinking of a Hill between the Church and the place of view: a parallel example whereto the learned Dr. *Plot* gives us, in a Hill between *Sibbertoft* and *Haſleby* in *Northamptonſhire*, *Hiſt. Nat. Stafford p.* 113. And thus will they continue to do ſo long as there falls any Rains, and as they retain any declivity, that is, till they be levelled with the Plains.

In confirmation of this Particular, I have received from my ingenious Friend Mr. *Edward Lloyd*, ſome notable Obſervations of his own making concerning the Mountains of *Wales*; which do demonſtrate that not only the looſer and the lighter parts of the Mountains, as Earth, Sand, Gravel, and ſmall Stones, may be waſhed down by the Rains: but the moſt ſolid and bulky Rocks themſelves, by the violent deſcent of the Waters

Waters down their Chinks and Precipices, be in time undermined and ſubverted. Take them in his own words:

*Upon the reading of your Diſcourſe of the Rains continually waſhing away, and carrying down Earth from the Mountains, I was put in mind of ſomething pertinent thereto, which I have obſerved in the Mountains of* Caernarvonſhire, *viz.*

1. *Firſt, That generally the higher the Hills are the more ſteep are their Precipices and Declivities (I except the Sea-rocks) thus* Moel y Wydhrha, y Grîb gôtch, *and twenty others that might be named, reputed the higheſt Hills in* Wales, *have the ſteepeſt Rocks of any Mountains I have ſeen; and that not only in their higheſt Cliffs, but alſo in moſt of their other Crags, till you deſcend to the lower Valleys: This I can aſcribe to nothing elſe but the Rains and Snow which fall on thoſe high Mountains, I think, in ten times the quantity they do on the lower Hills and Valleys.*

2. *I have obſerved a conſiderable quantity of the chips or parings (if I may ſo call them) of theſe Cliffs to lye in vaſt heaps at the roots of them; and theſe are of ſeveral ſorts and materials: being in ſome places covered with Graſs, and in others as bare as the Sea-ſhore: and thoſe bare places do conſiſt ſometimes of Gravel,*

*Gravel, and an innumerable number of Rock-fragments from a pound weight to twenty,* &c. *and are ſometimes compoſed of huge Stones from an hundred pound weight to ſeveral Tuns.*

3. *In the Valleys of* Lhanberys *and* Nant-Phrankon, *the People find it neceſſary to rid their Grounds often of the Stones which the Mountain floods bring down; and yet notwithſtanding this care, they often loſe conſiderable parcels of Land.*

4. *I affirm, That by this means not only ſuch Mountains as conſiſt of much Earth and ſmall Stones, or of ſofter Rocks, and ſuch as are more eaſily diſſoluble, are thus waſted, but alſo the hardeſt Rocks in* Wales; *and they ſeem to be as weighty, and of as firm and cloſe a texture as Marble it ſelf. It happen'd in the Valley of* Nant-Phrancon, Anno 1685. *that part of a Rock of one of the impendent Cliffs, call'd* yr Hyſv. ë, *became ſo undermined (doubtleſs by the continual Rains and ſubterraneous Veins of Water occaſioned by them) that loſing its hold it fell down in ſeveral pieces, and in its paſſage down a ſteep and craggy Cliff, diſlodged thouſands of other Stones, whereof many were intercepted e're they came down to the Valley, but as much came down as ruin'd a ſmall piece of Ground; and ſeveral Stones were ſcatter'd at leaſt 200 yards aſunder. In this Accident*

*one*

*one great Stone, the biggeſt remaining piece of the broken Rock, made ſuch a Trench in its deſcent, as the ſmall Mountain rills commonly run in; and when it came down to the plain Ground, it continued its paſſage through a ſmall Meadow, and a conſiderable Brook, and lodged it ſelf on the other ſide it. From hence I gather that all the other vaſt Stones that lye in our mountainous Valleys, have by ſuch Accidents as this fallen down. Unleſs perhaps we may do better to refer the greateſt part of them to the Univerſal Deluge. For conſidering there are ſome thouſands of them in theſe two Valleys* [*of* Lhanberys *and* Nant-Phrancon] *whereof* (*for what I can learn*) *there are but two or three that have fallen in the memory of any Man now living; in the ordinary courſe of Nature we ſhall be compelled to allow the reſt many thouſands of years more then the Age of the World.* So far Mr. *Lloyd.*

To this laſt Particular, and for a further account of it, may be added, That ſometimes there happen ſtrange and violent Storms and Hurricanes, wherein the Rain is driven with that force upon the tops and ſides of the Mountains by furious and tempeſtuous Winds, as to do more execution upon them by breaking in pieces, tearing and throwing down Rocks and Stones, in a few days, then in

in the ordinary courſe of Nature, by the uſual Weather is effected in many hundred years.

2. By reaſon of the abundance of Earth thus waſhed off the Mountains by ſhots of Rain, and carried down with the Floods to the Sea; about the out-lets of the Rivers, where the violent Motion of the Water ceaſes, ſetling to the bottom, and raiſing it up by degrees above the Surface of the Water, the Land continually gains upon, and drives back the Sea: The *Egyptian Pharos* or Light-houſe of old time ſtood in an Iſland a good diſtance from Land, which is now joyned to the Continent, the interjacent *Fretum* having been filled up by the Silt brought down by the River *Nilus* in the time of the Flood ſubſiding there. Indeed the ancient Hiſtorians do truly make the whole Land of *Egypt* to have been δῶρον ποταμοῦ, the Gift of the River, and by this means gained from the Sea. *Seneca* in the ſixth Book of his *Nat. Queſt. chap.* 26. gives this account, *Ægyptus ex limo tota concrevit. Tantum enim (ſi Homero fides) aberat à continenti Pharos, quantum navis diurno curſu metiri plenis lata velis poteſt. Sed continenti admota eſt. Turbidus enim defluens Nilus, multumque ſecum limum trahens, & eum ſubinde apponens prioribus terris, Ægyptum annuo incremento*

*ſemper*

*ſemper ultra tulit. Inde pinguis & limoſi ſoli eſt, nec ulla intervalla in ſe habet; ſed crevit in ſolidum areſcente limo, quo preſſa erat & cedens ſtructura, &c.* that is, all *Egypt* is but a Concretion of Mud. *For (if* Homer *may be believed) the* Pharos *was as far diſtant from the Continent, as a Ship with full ſail could run in a days time; but now it is joyned to it. For* Nilus *flowing with troubled Waters brings down a great deal of Mud and Silt, and adding it to the old Land, carries on* Egypt *further and further ſtill by an annual increaſe. Hence it is of a fat and muddy Soil, and hath no pores or cavities in it. And this Reaſon he gives why it is not troubled with Earthquakes.* Which alſo may be the Reaſon why it hath no freſh Springs and Fountains: For though indeed Dr. *Robinſon* doth very probably impute its want of Rain and Springs to the want of Mountains; yet becauſe (as we ſhall afterwards prove) Springs may be derived from Mountains at a good diſtance, I know not whether all Mountains are ſo far remote from *Egypt*, as that there may be no ſubterraneous Channels of that length as to derive the Water even thither from them; and therefore probably one Reaſon of their wanting of Springs may be the denſity and thickneſs of the Soil, whereby it becomes impenetrable to the Water;

and it may be, ſhould they uſe the ſame Artifices there, which the Inhabitants of the lower *Auſtria*, and of the Territory of *Modena* and *Bologna* in *Italy* do, that is, dig and bore quite through this Coat of Mud till they come to a Sand or looſer Earth, they might in like manner procure themſelves Fountains of ſpringing Water. Thus by reaſon of the great Rivers, *Po*, *Atheſis*, *Brenta*, and others, which empty themſelves into the *Lagune*, or Shallows about *Venice* in *Italy*, and in times of Floods bring down thither great ſtore of Earth, thoſe *Lagune* are in danger to be in time atterrated, and with the City ſituate in the midſt of of them, added to the firm Land, they being already bare at every Ebb, only Channels maintain'd from all the neighbouring Places to the City, not without conſiderable Charge to the State in Engines and Labourers in ſome places to clear them of the Mud, wherewith otherwiſe they would indanger to be obſtructed and choaked up; which Engines they call *Cava-fango's*. Thus in the *Camarg*, or Iſle that the River *Rhoſne* makes near *Arles* in *Provence*, there hath been ſo much lately gained from the Sea, that the Watch-tower had, in the memory of ſome Men living 1665. been removed forward three times, as we were there informed.

And

And it ſeems to me probable, that the whole *Low-Countreys* were thus gained from the Sea: For *Varenius* in his Geography tells us, That ſinking a Well at *Amſterdam*, at near an hundred foot depth, they met with a bed or floor of Sand and Cockle-ſhells; whence it is evident, one would think, that of old time the bottom of the Sea lay ſo deep, and that that hundred foot thickneſs of Earth above the Sand, aroſe from the Sediments of the Waters of thoſe great Rivers, the *Rhine*, *Scheld*, *Maes*, &c. which thereabouts emptied themſelves into the Sea, and in times of Floods brought down with them abundance of Earth from the upper Grounds: The ſame Original doubtleſs had that great Level of the Fens, running through the Iſle of *Ely*, *Holland* in *Lincolnſhire*, and *Marſhland* in *Norfolk*. That there hath been no ſmall quantity of Earth thus brought down, appears alſo in that along the Channels of moſt great Rivers, as for Example, the *Thames* and *Trent* in *England*, eſpecially near their Mouths or Out-lets, between the Mountains and higher Grounds on each ſide, there are large Levels and Plains, which ſeem to have been originally part of the Sea, raiſed up, and atterrated by Earth and Silt brought down by thoſe Rivers in great Floods.

*Strabo* in the firſt Book of his Geography ſpeaks much to this purpoſe; Ἡ γὰρ προσχωσις τῶν αὐλακων σημεῖα τὰ ξύμπαντα τῆς παραλίου· περὶ μὲν τὰ τοῦ Ἴστρου τὰ λεγόμενα Σκύθια, καὶ ἡ Σκυθῶν ἐρημία· περὶ δὲ τὰ τοῦ Φάσιδος Κολχικὴ παραλία, ὀλισθηρὰ, καὶ ψαμμώδης, καὶ μαλακὴ ἅπασα· περὶ δὲ τὴν Θερμώδοντα καὶ τὴν Ἶριν ἡ Θεμίσκυρα, τὸ τῆς Ἀμαζόνων πεδίον, καὶ ἡ Σιδηνὴ τὸ πλέον. Οὕτω δὲ καὶ ὅπου τῆς ἄλλης, ἔστιν ἃ μὲν γὰρ Νείλου, ἐξηπειρῶσθαι τὴν παρὰ αὐτῆς πόσει, οἱ μὲν μᾶλλον, οἱ δ' ἧττον. ἧττον μὲν οἱ μὴ πολλοῦ τε καὶ μαλακόγειον χώραν κατέχοντες καὶ χειμάρρους δεχόμενοι πολλούς· ὧν ἐστι καὶ ὁ Πύραμος, ὁ τῇ κιλικίᾳ πολὺ μέρος προσθείς· ἐφ' ὃν καὶ λόγιόν τι ἐκπέφευγέ τοιοῦτον

Φασὶ ἀνομένοις ὅτε Πύραμος ἐυρυδίνης
Ἠιόνα προχέων ἱερὼ ἐς Κύπρον ἵκηται.

And after a while, he adds, Οὕτω μὲν οὖν οἱ δέλτα προσγεωδεῖ τὸ πέλαγος πᾶν ὀπὸ τῆς αἰγιαλῶν ἀρξάμενον, ἂν συνεχεῖς ἔχῃ τὰς ὄχθας τῆς παραλίου ἐπιφύσεις. That is, For this landing up and atterration of the ſkirts of the Sea, is for the moſt part about the mouths of Rivers, as about the Out-lets of *Iſter* the places called Σκύθια and the Deſerts of *Scythia*: about thoſe of *Phaſis* the Sea-coaſt of *Colchis*, which is ſandy, and low, and ſoft: About *Thermodon* and *Iris* all *Themiſcyra*, the Plain of the *Amazons*, and the moſt

moſt part of *Sidene*. And the like may be ſaid of other Rivers. For all of them imitate the *Nile*, adding to the Continent or Mainland the part lying before their mouths, ſome more, ſome leſs: thoſe leſs, that bring not down much Mud; and thoſe more, that run a great way over ſoft and loſe Ground, and receive many Torrents: Of which kind is the River *Pyramus*, which hath added a great part of its Land to *Cilicia*. Concerning which there is an Oracle come abroad, importing, That there will a time come in future Ages, when the River *Pyramus* ſhall carry on the Shore and Land up the Sea as far as *Cyprus*..... So it might in time happen that the whole Sea ſhould gradually be landed up, beginning from the Shores, if the Effuſions of the Rivers, that is, the Earth and Mud they bring down did ſpread ſo wide as to be continuous. Thus far *Strabo*. But the Oracle he mentions, predicting the carrying on and continuation of *Cilicia* as far as *Cyprus*, and the joyning that Iſland to the Continent, proves falſe; there having not been as yet, that we hear or read of, any conſiderable advance made towards it, in almoſt 2000 years.

Now the Rain thus continually waſhing away, and carrying down Earth from the Mountains and higher Grounds, and raiſing

up the Valleys near the Sea, as long as there is any deſcent for the Rivers, ſo long will they continue to run, carry forward the low Ground, and ſtreighten the Sea; which alſo by its working, by reaſon of the declivity, eaſily carries down the Earth towards the lower and middle part of its Channel [ *alveus* ] and by degrees may fill it up. Monſieur *Loubere* in his late Voyage to *Siam*, takes notice of the increaſe of the Banks and Sands in and near the Mouths of the great Rivers of the Oriental Kingdoms, occaſion'd by the Sediments brought down from the Countries by the ſeveral Streams; ſo that, ſays he, the Navigation into and up thoſe Rivers grows more and more difficult, and may in proceſs of time be quite interrupted. The ſame Obſervation, I believe, may be made in moſt of our great Europæan Rivers, wherein new Beds are rais'd, and old ones enlarged. Moreover, the Clouds ſtill pouring down Rain upon the Earth, it will deſcend as far as there is any declivity; and where that fails it will ſtagnate, and joyning with Sea, cover firſt the skirts of the Earth, and ſo by degrees higher and higher, till the whole be covered.

To this we may add, that ſome aſſiſtance toward the levelling of the Mountains, may be contributed by the Courſes and Catarracts

racts of ſubterraneous Rivers waſhing away the Earth continually, and weakning their foundations, ſo by degrees cauſing them to founder, ſubſide, and fall in. That the Mountains do daily diminiſh, and many of them ſink; that the Valleys are raiſed; that the skirts of the Sea are atterrated, no man can deny. That theſe things muſt needs in proceſs of time have a very conſiderable and great effect, is as evident; which what elſe can it be, then that we have mentioned?

Moreover, towards this levelling of the Mountains, and filling up of the Sea, the fire alſo contributes its Mite. For the burning Mountains or *Vulcano's*, as for example *Ætna* and *Veſuvius*, vomit at times out of their Bowels ſuch prodigious quantities of Sand and Aſhes, and with that force, that they are by the Winds carried and diſperſed all over the Country, nay tranſported over Seas into foreign and remote Regions; but let fall ſo copiouſly in the circumjacent places, as to cover the Earth to a conſiderable thickneſs; and not only ſo, but they alſo pour forth Floods of melted Stones, Minerals and other Materials, that run down as low as the Sea, and fill up the Havens, as of old one near *Catana*; and make Moles and Promontories or Points, as in the laſt Eruptions both of *Ætna* and *Veſuvius*; the Tops of theſe

Mountains falling in and ſubſiding proportionably to the quantity of the ejected matter, as *Borellus* proves. Meeting with a quotation in Dr. *Hakewil*'s Apology out of *Joſephus Blancanus* his Book *De Mundi Fabrica*, I earneſtly deſired to get a ſight of that Book, but could not procure it till the Copy of this Diſcourſe was out of my hands and ſent up to *London* in order to its printing. But then obtaining it, I found it ſo exactly conſonant to my own thoughts, and to what I have here written concerning that Subject; and ſome Particulars occurring therein by me omitted, that I could not forbear tranſlating the whole Diſcourſe into *Engliſh*, and annexing it to this Chapter, eſpecially becauſe the Book is not commonly to be met with. The Diſcourſe is firſt ſet down in his Book *De locis Mathematicis Ariſtotelis* more at large, and afterward repeated in his Book *De Mundi Fabrica* more briefly.

*Pergratum Lectori fore exiſtimavi, ſi rem ſcitu digniſſimam expoſuero*, &c. I thought it might be very acceptable to the Reader, if I ſhould diſcover to him a thing moſt worthy to be known; which I have long ago, and for a long time obſerved, and am daily more confirmed in: eſpecially ſeeing no former Writer that I know of hath publiſhed any thing concerning it. It is this, That the

*Su-*

*Superficies* of the whole Earth, which is now rough and uneven by reaſon of Mountains and Valleys, and ſo only rudely Sphærical, is daily from the very beginning of the World reducing to a perfect roundneſs, in ſo much that it will neceſſarily come to paſs in a natural way, that it be one day overflown by the Sea, and rendred unhabitable.

Firſt then, that we may clearly apprehend the Cauſes of this thing, we muſt lay down as a Foundation from Holy Writ, That the Terraqueous Globe was in the beginning endued with a more perfect Spherical Figure, that is, without any inequalities of Mountains and Valleys: and that it was wholly covered with the Sea, and ſo altogether unfit for Terreſtrial Animals to inhabit: but it was then rendred habitable, when by the beck or command of its Creator the greateſt part of the Land was tranſlated from one place to another, whereupon here appeared the hollows of the Seas, there the heights of the Mountains: And all the Waters which before covered the face of the whole Earth receded, and flowing down filled thoſe depreſſed and hollow places; and this Congregation of Waters was called the *Sea*. Hence ſome grave Authors doubt not to aſſert, That the Mountains were made up

up of that very Earth which before filled the Cavities of the Sea. Whence it follows, that the Earth as now it is, mountainous and elevated above the Waters, hath not its Natural Figure, but is in a violent ſtate: but *Nullum violentum eſt perpetuum.* Beſides the Earth being heavier then the Water, none of its parts ought to be extant and appear above its Superficies; and yet we ſee that the Earth is really higher than the Sea, eſpecially the mountainous parts of it: in which reſpect alſo both Land and Water are in a violent ſtate. Wherefore it is very convenient to the Nature of both, that they ſhould daily return towards their ancient and primigenial ſtate and figure, and accordingly we affirm that they do ſo.

Moreover, we ſay that the Waters, both of Rains and Rivers, are the Cauſe of this Reſtitution, as will appear by the following Obſervations.

Firſt we ſee that Rivers do daily fret and undermine the Roots of the Mountains, ſo that here and there from moſt Mountains they cauſe great Ruins and Precipices, whence the Mountains appear broken: and the Earth ſo fallen from the Mountains the Rivers carry down to the lower places.

From

From these Corrosions of the Rivers proceed these slow, but great Ruines, called, *Labinæ à labendo*; in which some Streets, and whole Villages are precipitated into the Rivers.

2. We daily see, that the Rain-waters wash away the *Superficies* of the Mountains, and carry them down to the lower places. Hence it comes to pass, that the higher Mountains are also harder and more stony than the rest, by means whereof they better resist the Water. Hence also it comes to pass, that ancient Buildings in Mountains, their Foundations being by degrees discovered, prove not very durable. For which reason the Foundations of the *Roman Capitol* are now wholly extant above ground; which of old, at its first erection, were sunk very deep into it. This same thing all the Inhabitants of the Mountains do confirm; all saying, that this lowering of Mountains was long since known to them; for that formerly some intermediate Mountains intercepted the sight of a Castle, or Tower, situate in a more remote Mountain; which after many Years the intervenient Mountain being depressed, came clearly into view. And *George Agricola* is of Opinion (which I very much approve of) that the Rivers produced the Mountains and Hills in this manner. In the beginning of

of the World there were not ſo many particular divided Mountains, but only perpetual eminent Ridges of Land, not diſſected into ſo many Valleys as we now ſee. So, for example, our *Appennine* was at firſt one continued even eminent Ridge of Land, not divided into any particular Mountains and Hills by intervening Valleys, as now it is: but that after the Rivers began to flow down from the top of it, by little and little fretting and corroding the Ground, they made Valleys, and daily more and more; and by this means the whole *Apennine* came to be divided into many Hills and Mountains.

3. In Plains we ſee the directly contrary happens: for the Plains are daily more and more elevated, becauſe the Waters do let fall in the plain and hollow places the Earth they brought down with them from the Mountains. Hence we ſee that ancient Buildings in ſuch places are almoſt wholly buried in the ground. So in *Rome*, at the foot of the *Capitoline* Mountain, we ſee the *Triumphal Arch of Septimius* almoſt wholly overwhelmed in the Earth: and every-where in ancient Cities many Gates and Doors of Houſes almoſt landed up, little thereof being extant above ground.

From

From which it appears, that this ſinking and demerſion of Buildings into the Earth is a manifeſt ſign of their Antiquity, which is ſo much the greater, by how much the deeper they are ſunk. So, for example, at *Bononia* in *Italy*, many of the ancient Gates of the City, which the *Bologneſe* call *Torreſotti*, are very deeply ſunk, which is a certain argument of their Antiquity, and thence it appears to be true that Hiſtories relate, that they were built in the time of *S. Petronius*, about 1200 Years ago. But here it is to be noted, that other things agreeing, thoſe are deeper depreſſed that are built in lower places than thoſe in higher, for the reaſon above-ſaid. So at *Bononia*, that old Port called, *Il Torreſotto di S. Georgio*, is deeplier buried, or landed up, than that which is called, *Il Torreſotto di Stra Caſtilione*, becauſe that is ſituated in a lower place, and therefore the Earth is more eaſily raiſed up about it.

4. The ſame is affirmed by Architects, who when they dig their Foundations, do every-where in plain places firſt of all remove the Earth which they call *Commota* [looſe or ſhaken] which is mixt with Fragments of Wood, Iron, Rubbiſh, Coyns, ancient Urns, and other things; which when it is thrown out, they come to another ſort of Earth that hath

hath never been ſtirred, but is ſolid, compact, and not mixt with any heterogeneous things, eſpecially artificial. That moved [Commota] and impure Earth, is it which the Waters have by little and little brought down from the higher to the more depreſſed places, which is not every-where of equal depth. But now becauſe in the Mountains there is no where found ſuch moved or new Earth, as is plain from the Experience of Architects, it is manifeſt that the Mountains do by no means grow or encreaſe, as ſome dream.

5. Our Obſervation is proved from that Art which is now much practiſed of elevating and landing up depreſſed places by the Waters of Rivers, and depreſſing the higher by running the Water over them.

The ſame things happen about the Sea, for whereas the bottom of the Sea is more depreſſed than the *Superficies* of the Earth; and all the great Rivers empty themſelves into the Sea, and bring in with them a great quantity of Earth and Sand, there muſt needs be great Banks or Floors of Earth raiſed up about the Sea-ſhores, near the mouths of Rivers, whereby the Shores muſt neceſſarily be much promoted and carried forward into the Sea, and ſo gain upon it, and compel it to recede.

This

This may be proved first by the Authority of *Aristotle*, lib. 1. *Meteor.* cap. *De permutatione terræ ac maris*; and that of the ancient Geographers and Historians. To omit that Proof from *Egypt*; *Aristotle*'s second example of this landing up of the Sea, is the Region of *Ammonia*, whose Lower and Maritime places (saith he) it's clear, were by this landing up first made Pools and Fens, and in process of time these Pools were dryed up, and raised to be firm Land, by Earth brought down. A third example is that of the *Mæotis palus*, whose skirts are so grown up by what the Rivers bring down, that the Waters will not carry any thing so great Ships, as they would have done sixty Years ago. A fourth is the *Thracian Bosphorus*, which for brevity's-sake may be seen in him. Add hereto in the fifth place, the Testimony of *Pliny*, who tells us, that much new Land hath been added to the Earth, not only brought in by the Rivers, but deserted by the Sea.

So the Sea hath receded ten Miles from the Port of *Ambracia*, and five from that of *Athens*, and in several other places more or less. What he adds out of *Strabo*, concerning the River *Pyramus* is already entred.

6. Nei-

6. Neither are later and nearer Experiments wanting. Of old time *Ravenna* ſtood upon the brink of the Sea-ſhore, which is now by reaſon of the landing up the Shallows far diſtant from it. The Sea waſhed the Walls of *Padua*, which is now Twenty five Miles remote therefrom. In fine, our *Rhene* of *Bologna*, though it be but a ſmall Torrent, yet in a few Years ſince it hath been by an artificial Cut let into the *Po*, it hath ſo filled it up, and obſtructed its Channel with Sand and Mud, that it hath much endamaged the neighbouring Fields. Seeing then by theſe various aggerations of Sand and Silt, the Sea is daily cut ſhort, and driven back, and its Baſin or Receptable ſtraitned, and the bottom thereof raiſed, it will neceſſarily come to paſs in time, that it will begin to overflow: as now it happens in many places, for example, in the *Baltick*, *Danick*, and *Holland* Shores, in which places they are forced to erect and maintain long and high Banks and Fences againſt the Inundations of the Sea.

Therefore, after this manner, that Earth which now makes up the Mountains, being by the Water little by little brought down into the Cavities of the Sea, is the Cauſe why the Sea gradually here and there overflows the *Superficies* of the Earth; and ſo the Globe of

of the Earth by the affuſion of the Waters, will be again rendred unhabitable, as at firſt it was in the beginning of the World; and the Earth and Water will return to their primitive ſtate and figure, in which they ought naturally to reſt.

Hence we may deduce ſome Conſectaries worthy to be known; *viz.* That the World, or at leaſt the Earth, was not endued with that Figure which we now ſee; neither can the World endure for ever. For if this mountainous Figure had been in it from Eternity, all thoſe protuberancies of the Mountains had been long ſince eaten away and waſted or conſumed by the Waters. Nor can this World be Eternal; becauſe, as we have proved, in proceſs of time it will be reduced to a perfect rotundity, and be overflown by the Sea; whereupon it will become unhabitable, and Mankind muſt neceſſarily periſh. Wherefore unleſs that Deluge were prevented by the Fire which the Holy Scriptures mention, the World would nevertheleſs be deſtroyed by Water. Long after I had committed theſe things to writing, I met with *Philo Judæus* his book *De Mundo*, wherein he touches this matter but obſcurely, and in a very few words.

Thus far *Blancanus*, whoſe Sentiments and Obſervations concerning this matter thus punctually concurring and according with mine, to my great wonder and ſatisfaction, I could not but think that the Concluſion hath a high degree of probability. Only he takes no notice, that in compenſation of what the Rivers gain from the Sea about their Outlets, the Sea may gain from the Land by undermining and waſhing away the Shores that are not rocky, (as we ſee it doth in our own Country) perhaps as much as it loſes, according to the Vulgar Proverb before remembred. However, all contributes towards the filling up of the Sea, and bringing on an Inundation, as I ſhall afterwards ſhew.

But it may be objected, That if the Waters will thus naturally and neceſſarily in proceſs of time again overflow and cover the Earth, how can God's Promiſe and Covenant be made good, *Gen.* 9. 11. That *there ſhould not any more be a Flood to deſtroy the Earth.*

To which I anſwer, 1. That though this would follow in a natural way, yet the power of God may interpoſe to prevent it, and ſo make good his Promiſe. 2. Though it might come to paſs in the Courſe of Nature, yet would it be after ſo many Ages, that it

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is not at all likely the World ſhould laſt ſo long: but the Conflagration or Deſtruction of it by Fire, predicted by the Scriptures, will certainly prevent it. 3. Poſſibly there may be ſomething in Nature which may obviate this Event, though to us at preſent unknown, which I am the more inclinable to believe, becauſe the Earth doth not haſten ſo faſt towards it as ſome of the Ancients imagined, and as the activity of ſuch Cauſes might ſeem to require, as I have already intimated.

*Varenius* in his Geography putting the Queſtion, Whether the Ocean may again come to cover all the Earth, and make an Univerſal Deluge; anſwers, That we may conceive a way how this may naturally come to paſs. The manner thus; Suppoſing that the Sea by its continual working doth undermine and waſh away the Shores and Cliffs that are not rocky, and carry the Earth thereof down towards the middle, or deepeſt parts of its Channel, and ſo by degrees fill it up. By doing this perpetually, it may, in a long ſucceſſion of Time, carry all away, and it ſelf cover the whole Earth. That it doth thus ſubvert and waſh away the Shores in many places is in experience true. About *Dort* in *Holland* and *Dullart* in *Frieſland*, and in *Zealand* many Villages,

ſome ſay Three hundred, have been drown'd by the encroachments of the Sea, as ſome of their Towers and Steeples ſtill extant above the Waters do teſtifie. On the *Tuſcan* ſhore, *Kircher* tells us, That not far from *Ligorn* he himſelf had obſerved a whole City under Water, that had been in former times drown'd by the Inundation of the Sea. And over againſt *Puteoli* in the *Sinus* of *Baia*, he tells us, That in the bottom of the Sea, there are not only Houſes, but the Traces and Footſteps of the Streets of ſome City manifeſtly diſcernable. And in the County of *Suffolk*, almoſt the whole Town of *Donewich*, with the adjacent Lands, hath been undermined and devoured by the Sea.

This waſhing away of the Shores is, I conceive, in great meaſure to be attributed to the forementioned ſtreightning and cutting ſhort of the Sea, by the Earth and Silt that in the times of Floods are brought down into it by the Rivers. For the Vulgar have a Proverbial Tradition, *That what the Sea loſes in one place, it gains in another.* And both together do very handſomly make out and explain, how the Earth in a natural way, may be reduced to its primitive ſtate in the Creation, when the Waters covered the Land. But this according to the leiſurely proceedings of Nature, would not

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come to paſs in many Ages, I might ſay, in Ages of Ages: Nay, ſome think, that thoſe vaſt Ridges and Chains of Mountains, which run through the middle of the Continents, are by reaſon of their great height, weight and ſolidity, too great a Morſel ever to be devoured by the Jaws of the Sea. But whether they be or not, I need not diſpute, though I incline to the Negative, becauſe this is not the diſſolution the Apoſtle here ſpeaks of, which muſt be by Fire.

But I muſt not here diſſemble an Objection I ſee may be made, and that is, That the *Superficies* of the Earth is ſo far from being depreſſed, that it is continually elevated. For in ancient Buildings, we ſee the Earth raiſed high above the foot of them. So the *Pantheon* at *Rome*, which was at firſt aſcended up to by many [eight] Steps, is now deſcended down to by as many. The Baſis and whole Pedeſtal of *Trajan*'s Pillar there was buried in the Earth.

*Dr.* Tancred Robinſon *in the year* 1683. *obſerv'd in ſome places, the Walls of old* Rome, *to lye Thirty and Forty Foot under Ground; ſo that he thinks the greater part of the Remains of that famous Ancient City is ſtill buried, and undiſcovered; the prodigious heaps of Ruins and Rubbiſh incloſed within the Vineyards and Gardens being not half*

*dig'd up or ſearch't, as they might be, the tops of Pillars peeping up and down.* And in our own Country we find many Ancient *Roman* Pavements at ſome depth under Ground My Learned and Ingenious Friend Mr. *Edward Loyd*, not long ſince inform'd of one, that himſelf had ſeen buried deep in the Church-yard at *Wycheſter* in *Gloceſterſhire*. Nay, the Earth in time will grow over and bury the Bodies of great Timber Trees, that have been fallen, and lye long upon it; which is made one great reaſon, that ſuch great numbers (even whole Woods) of Subterraneous Trees are frequently met with, and dug up at vaſt depths in the *Spaniſh* and *Dutch Netherlands*, as well as in many places of this Iſland of *Great Britain*.

To which I anſwer, as to Buildings, 1. The Ruins and Rubbiſh of the Cities wherein they ſtood, might be conceived to bury them as deep as they now lye under ground. And by this means it's likely the *Roman* Pavements we find, might come to be covered to that height we mentioned. For that the places where they occur, were anciently *Roman* Towns ſubverted and ruined, may eaſily be proved; as particularly in this we mention'd, from the Termination *Cheſter*; whatever Town or Village hath that

that addition to its Name, having been anciently a *Roman* Town or Camp: *Cheſter* ſeeming to be nothing but *Caſtra.*

2. It is to be conſider'd, That weighty Buildings do in time overcome the reſiſtance of the Foundation, unleſs it be a ſolid Rock; and ſink into the ground.

Nay, the very ſoft Water, lying long upon the bottoms of the Sea or Pools, doth ſo compreſs and ſadden them by its weight, that the very Roads that are continually beaten with Horſes and Carriages, are not ſo firm and ſad: And in the Sea, the nearer you dig to the Low Water-Mark; ſtill the ſadder and firmer it is: and it's probable ſtill, the further the ſadder; which ſeems to be confirmed by the ſtrong fixing of Anchors. [This firmneſs of the Sand, by the weight of the incumbent Water, the People inhabiting near the Sea are ſo ſenſible of, that I have ſeen them boldly ride through the Water croſs a Channel three Miles broad, before the Tide was out, when in ſome places it reacht to the Horſes Belly.] A ſemblance whereof, we have in Ponds, which being newly digg'd, the Water that runs into them, ſinks ſoon into the Earth, and they become dry again, till after ſome time, by often filling, the Earth becomes ſo ſolid, through the weight of the Wa-

ter, that they leak no more, but hold Water up to the brink. *Wittie Scarborough Spaw, p.* 86.

What force a gentle, if continual preſſure hath, we may underſtand alſo by the Roots of Trees, which we ſee will ſometimes pierce through the Chinks of Stone Walls, and in time make great Cracks and Rifts in them; nay, will get under their very Foundations. The tender Roots of Herbs overcome the reſiſtance of the ground, and make their way through Clay or Gravel. By the by, we may here take Notice, that one reaſon why plowing, harrowing, ſifting, or any commination of the Earth, renders it more fruitful, is, becauſe the Roots of Graſs, Corn, and other Herbs can, with more facility, creep abroad, and multiply their Fibres in the light and looſe Earth.

That the rotting of Graſs, and other Herbs upon the ground, may in ſome places raiſe the *Superficies* of it, I will not deny; that is, in Gardens and Encloſures, where the Ground is rank, and no Cattel are admitted to eat off the Fog or long Graſs: but elſewhere, the raiſing of the Superficies of the Earth is very little and inconſiderable; and none at all, unleſs in level Grounds, which have but little declivity: For otherwiſe the Soyl would by this time have come to be of

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a very great depth, which we find to be but ſhallow. Nor do I think, that ſo much as the Trunks of fall'n Trees, are by this means covered; but rather, that they ſink by their own weight, in time overcoming the reſiſtance of the Earth, which without much difficulty yields, being ſoaked and ſoftned by the Rains inſinuating into it, and keeping it continually moiſt in Winter-time. But if theſe Buildings be ſituate in Valleys, it is clear, that the Earth brought down from the Mountains by Rain, may ſerve to land them up. Again, the Superficies of the Earth may be raiſed near the Sea Coaſt, by the continual blowing up of Sand by the Winds. This happens often in *Norfolk*, and in *Cornwall*, where I obſerved a fair Church, *viz.* that of the Pariſh called *Lalant*, which is the Mother Church to St. *Ives*, and above two Miles diſtant from the Sea, almoſt covered with the Sand; little being extant above it, but the Steeple and Ridge of the Roof. Nay, a great part of St. *Ives* itſelf lies buried in the Sand: and I was told there, that in one Night there had been a whole Street of Houſes ſo covered with Sand, that in the Morning they were fain to dig their way out of their Houſes through it. All along the Weſtern Shoar of *Wales*, there are great Hills of Sand thus blown up by the Wind. We obſerved

ſerved alſo upon the Coaſt of *Flanders* and *Holland*, the like ſandy Hills, or Downs, from which Weſterly Winds drive the Sand a great way into the Country. But there are not many places liable to this Accident, *viz.* where the bottom of the Sea is ſandy, and where the Wind moſt frequently blows from off the Sea; where the Wind ſets from the Land toward the Sea this happens not; where it is indifferent, it muſt in reaſon carry off as much as it brings on, unleſs other Cauſes hinder.

## SECT. II.

*The Second poſſible Cauſe of the World's Deſtruction in a Natural Way, the Extinction of the Sun.*

II. THE poſſibility of the Sun's extinction. Of which Accident I ſhall give an Account in Dr. *More*'s words, in the laſt Chapter of his Treatiſe of the *Immortality of the Soul.* "This (*ſaith he*) though "it may ſeem a *Panick Fear* at firſt ſight; "yet if the matter be throughly examined, "there will appear no contemptible Rea- "ſons that may induce Men to ſuſpect, that "it may at laſt fall out, there having been "at

" at certain times ſuch near Offers in Nature " towards this ſad Accident already. *Pliny* ſpeaks of it as a thing not unfrequent, that there ſhould be, *Prodigioſi & longiores Solis defectus, qualis occiſo Dictatore* Cæſare & Antoniano *bello, totius anni pallore continuo, Hiſt. Nat. lib.* 2. *cap.* 30. *Prodigious and laſting defects of the Sun, ſuch as happened when* Cæſar *the Dictator was ſlain; and in the War with* Anthony, *when it was continually pale and gloomy for a whole Year.* The like happened in *Juſtinian*'s time, as *Cedrenus* writes; when for a whole Year together the Sun was of a very dim and duskiſh Hue, as if he had been in a perpetual Eclipſe: And in the time of *Irene* the Empreſs, it was ſo dark for ſeventeen days together, that the Ships loſt their way in the Sea, and were ready to run one againſt another, as *Theophanes* reports. But the late accurate Diſcovery of the Spots of the Sun by *Scheiner*, and the appearing and diſappearing of Fixt Stars and Comets, and the excurſions of theſe laſt, do argue it more than poſſible, that after ſome vaſt Periods of Time, the Sun may be ſo inextricably inveloped by the *Maculæ*, that he may quite loſe his Light; and then you may eaſily gueſs what would become of the Inhabitants of the Earth. For without his viviſick heat, neither could the Earth put forth

forth any Vegetables for their ſuſtenance; neither if it could, would they be able to bear the extremity of the Cold, which muſt needs be more rigorous, and that perpetually, than it is now under the Poles in Winter time. But this accident, tho' it would indeed extinguiſh all Life, yet being quite contrary to a Diſſolution by Fire, of which the Apoſtle ſpeaks, I ſhall paſs it over without further conſideration, and proceed to a Third.

## SECT. III.

### *The Third poſſible Cauſe of the World's Deſtruction, The Eruption of the Central Fire.*

III. THE Poſſibility of the Eruption of the Central Fire, if any ſuch there be, incloſed in the Earth. It is the *Hypotheſis* of Monſieur *des Cartes*, that the Earth was originally a Star, or great Globe of Fire, like the Sun, or one of the Fixt Stars, ſituate in the Center of a *Vortex* continually whirling round with it. That by degrees it was covered over, or incruſtated with *Maculæ*, ariſing on its Surface, like the Scum on a boyling Pot, which ſtill increaſing and growing thicker and thicker, the Star loſing its light

light and activity, and consequently the motion of the Celestial Vortex about it growing more weak, languid, and unable to resist the vigorous incroachments of the neighbouring *Vortex* of the Sun; it was at last drawn in, and wholly absorpt by it, and forced to comply with its motion, and make one in the Quire of the Sun's *Satellites*. This whole Hypothesis I do utterly disallow and reject. Neither did the Author himself (if we may believe him) think it true, that the Earth was thus generated. For he saith, *Quinimo ad res naturales melius explicandas, earum causas altius hic repetam quàm ipsas unquam extitisse existimem. Non enim dubium est, quin mundus ab initio fuerit creatus cum omni sua perfectione, ità ut in eo & Sol, & Terra, & Luna, & Stellæ extiterint. . . . . Hoc fides Christiana nos docet; hócque etiam ratio naturalis planè persuadet. Attendendo enim ad immensam Dei potentiam, non possumus existimare illum unquam quidquam fecisse, quod non omnibus suis numeris fuerit absolutum.* That is, *Moreover, for the better explicating of Natural Things, I shall bring them from higher or more remote Causes than I think they ever had. For there is no doubt, but the World was originally created in its full perfection, so that in it were contained both Sun and Moon, and Earth and Stars,* &c. *For this*

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*the Chriſtian Faith teacheth us, and this alſo Natural Reaſon doth plainly perſuade; for attending to the immenſe Power of God, we cannot think that he ever made any thing that was not complete in all points.* But thô he did not believe that the Earth was generated, or formed according to his *Hypotheſis*, yet ſurely he was of Opinion, that it is at preſent ſuch a Body as he repreſented it after its perfect Formation, *viz.* with a Fire in the middle, and ſo many ſeveral Cruſts or Coats incloſing it: elſe would he have given us a mere Figment or Romance inſtead of a Body of Philoſophy.

But tho' I do reject the *Hypotheſis*; yet the being of a Central Fire in the Earth is not, ſo far as I underſtand, any way repugnant to Reaſon or Scripture. For firſt of all, the *Scripture* repreſents Hell as a Lake of Fire, *Mark* 9. 43, 44, *&c. Revel.* 20. 10, 14, 15. and likewiſe as a low place beneath the Earth. So *Pſalm* 86. 13. and *Deut.* 32. 22. it is called the *nethermoſt hell.* Prov. 15. 24. *The way of life is above to the wiſe, that he may depart from hell beneath.* 2. Many of the Ancients underſtand that Article of the Creed; *He deſcended into Hell*, of our Saviour's Deſcent into that local Hell beneath the Earth, where he triumphed over the Devil, and all the Powers of Darkneſs. And particularly *Ire-*

*næus*

*næus* interprets that ſaying of our Saviour, That *the Son of man ſhould be three days in the heart of the earth*, of his being three days in the middle of the Earth, which could not be meant (ſaith he) of the Sepulchre, becauſe that was hewen out of a Rock in its *Superficies*. 3. It is a received Opinion among the Divines of the Church of *Rome*, that Hell is about the Center of the Earth: inſomuch as ſome of them have been ſolicitous to demonſtrate that there is room enough to receive all the Damned, by giving us the Dimenſions thereof.

Neither is it repugnant to the Hiſtory of the Creation in *Geneſis*. For tho' indeed *Moſes* doth mention only Water and Earth, as the component parts of this Body; yet doth he not aſſert that the Earth is a ſimple, uniform, homogeneous Body; as neither do we, when we ſay, *Upon the face of the earth*, or the like. For the Earth, we ſee, is a Maſs made up of a multitude of different *Species of* Bodies, *Metals*, *Minerals*, *Stones*, and other Foſſils, *Sand*, *Clay*, *Marle*, *Chalk*, &c. which do all agree in that they are conſiſtent and ſolid more or leſs, and are in that reſpect contradiſtinguiſhed to Water; and together compound one Maſs, which we call Earth. Whether the interior parts of the Earth be made up of ſo great a variety of different Bo-

Bodies, is to us altogether unknown. For tho' it be obſerved by Colliers, that the Beds of Coals lie one way, and do always dip towards the Eaſt, let them go never ſo deep; ſo that, would it quit coſt, and were it not for the Water, they ſay, they might purſue the Bed of Coals to the very Center of the Earth, the Coals never failing or coming to an end that way; yet that is but a raſh and ungrounded Conjecture. For what is the depth of the profoundeſt Mines, were they a Mile deep, to the Semidiameter of the Earth? not as one to four thouſand. Comparing this Obſervation of Dipping with my Notes about other Mines, I find that the Veins or Beds of all generally run Eaſt and Weſt, and dip towards the Eaſt. Of which what Account or Reaſon can we give, but the motion of the Earth from Weſt to Eaſt? I know ſome ſay, that the Veins, for Example, of Tin and Silver, dip to the North, tho' they confeſs they run Eaſt and Weſt, which is a thing I cannot underſtand, the Veins of thoſe Metals being narrow things. Sir *Tho. Willoughby*, in his fore-mentioned Letter writes thus, —— "I have talked with ſome of my Colliers about the lying of the Coal, and find, that generally the Baſſet end (as they call it) lies Weſt, and runs deeper toward the Eaſt, allowing about twenty

twenty Yards in length to gain one in depth; but ſometimes they decline a little from this poſture; for mine lie almoſt South-Weſt, and North-Eaſt. They always ſink to the Eaſt more or leſs. There may therefore, for ought we know, be Fire about the Center of the Earth, as well as any other Body, if it can find a *Pabulum*, or Fuel there to maintain it. And why may it not? ſince the Fires in thoſe ſubterraneous Caverns of *Ætna*, *Veſuvius*, *Stromboli*, *Hecla*, and other burning Mountains or *Vulcano's*, have found wherewith to feed them for Thouſands of Years. And as there are at ſome, tho' uncertain Periods of Time, violent Eruptions of Fire from the *Craters* of thoſe Mountains, and mighty Streams of melted Materials poured forth from thence: ſo why may not this Central Fire in the Earth, (if any ſuch there be) receiving accidentally extraordinary ſupplies of convenient Fuel, either from ſome inflammable Matter within, or from without, rend the thick exterior *Cortex* which impriſons it, or finding ſome Vents and Iſſues break forth and overflow the whole *Superficies* of the Earth, and burn up all things. This is not impoſſible, and we have ſeen ſome *Phænomena* in Nature which bid fair towards a Probability of it. For what ſhould be the reaſon of new Stars ap-

pearing and diſappearing again; as that noted one in *Caſſiopeia*, which at firſt ſhone with as great a luſtre as *Venus*, and then by degrees diminiſhing, after ſome two Years vaniſh'd quite away? but that by great ſupplies of combuſtible Matter, the internal Fire ſuddenly increaſing in quantity and force, either found, or made its way through the Cracks or Vents of the *Maculæ* which incloſed it, and in an inſtant, as it were, overflowed the whole ſurface of the Star, whence proceeded that illuſtrious Light; which afterwards again gradually decayed, its ſupply failing. Whereas other newly appearing Stars, which either have a conſtant ſupply of Matter, or where the Fire hath quite diſſolved the *Maculæ*, and made them comply with its motion, have endured for a long time, as that which now ſhines in the Neck of *Cygnus*, which appears and diſappears at certain Intervals.

But becauſe it is not demonſtrable that there is any ſuch Central Fire in the Earth, I propoſe the eruption thereof rather as a poſſible than probable means of a Conflagration: and proceed to the laſt means whereby it may naturally be effected; and that is:

SECT.

## SECT. IV.

*The Fourth Natural Cauſe of the World's Diſſolution, the Earth's Dryneſs and Inflammability.*

IV. THE Dryneſs and Inflammability of the Earth under the Torrid Zone, with the eruption of the *Vulcano's* to ſet it on fire. Thoſe that hold the Inclination of the *Equator* to the *Ecliptick* daily to diminiſh, ſo that after the Revolutions of ſome Ages they will jump and conſent, tell us, that the Sun-beams lying perpendicularly and conſtantly on the parts under the *Equator*, the Ground thereabout muſt needs be extremely parch'd and rendred apt for Inflammation. But for my part I own no ſuch Decrement of Inclination. And the beſt Mathematicians of our Age deny that there hath been any ſince the eldeſt Obſervations that are come down to us. For tho' indeed *Ptolomy* and *Hipparchus* do make it more than we find it by above twenty Minutes, yet that Difference is not ſo conſiderable, but that it may well be imputed to the Difference of Inſtruments, or Obſervations in point of Exactneſs. So that not having decreaſed for Eighteen hundred

Years paſt, there is not the leaſt ground for Conjecture, that it will alter in Eighteen hundred Years to come, ſhould the World laſt ſo long. And yet if there were ſuch a Diminution, it would not conduce much (ſo far as I can ſee) to the bringing on of a Conflagration. For tho' the Earth would be extremely dried, and perchance thereby rendred more inflammable; yet the Air being by the ſame Heat as much rarified, would contain but few nitrous Particles, and ſo be inept to maintain the Fire, which, we ſee, cannot live without them: It being much deaded by the Sun ſhining upon it; and burning very remiſly in Summer time, and hot Weather: For this reaſon in Southern Countries, in extraordinary hot Seaſons, the Air ſcarce ſufficeth for Reſpiration. To the clearing up of this, let us a little conſider what Fire is. It ſeems to conſiſt of three different ſorts of parts. 1. An extremely thin and ſubtil Body, whoſe Particles are in a very vehement and rapid motion. 2. (A ſuppoſed) Nitrous *Pabulum* or Fewel, which it receives from the Air. 3. A Sulphureous or unctuous *Pabulum*, which it acts and preys upon, paſſing generally by the Name of Fewel. This 'fore-mentioned ſubtil Body agitating the (ſuppoſed) Nitrous Particles it receives from the Air, doth by their help,

as

as by Wedges, to uſe that rude ſimilitude, penetrate the unctuous Bodies, upon which it acts, and divide them into their immediate component Particles, and at length perchance into their firſt Principles: which Operation is called the Chymical Anatomy of mix'd Bodies. So we ſee Wood, for Example, divided by Fire into Spirit, Oyl, Water, Salt, and Earth.

That Fire cannot live without thoſe Particles it receives from the Air is manifeſt, in that if you preclude the acceſs of all Air, it is extinguiſhed immediately: and in that, where and when the Air is more charged with them, as in cold Countries, and cold Weather, the Fire rages moſt: That likewiſe it cannot be continued without an unctuous *Pabulum* or Fewel, I appeal to the Experience of all Men.

Now then in the rarified Air in the Torrid Zone, the nitrous Particles being proportionably ſcattered and thin ſet, the Fire that might be kindled there would burn but very languidly and remiſly, as we ſaid juſt now: And ſo the Eruptions of *Vulcano*'s, if any ſuch happened, would not be like to do half the Execution there that they would do in cold Countries. And yet I never read of any ſpreading Conflagration cauſed by the Eruptions of any *Vulcano's*, either in hot Coun-

tries, or in cold. They uſually caſt out abundance of thick Smoak like Clouds darkning the Air: and likewiſe Aſhes and Stones, ſometimes of a vaſt bigneſs; and ſome of them, as *Veſuvius*, Floods of Water; others, (as *Ætna*) Rivers of melted Materials, running down many Miles: as for the Flames that iſſue out of their Mouths at ſuch times, they are but tranſient, and mounting upwards, ſeldom ſet any thing on fire.

But not to inſiſt upon this, I do affirm, that there hath not as yet been, nor for the future can be any ſuch drying or parching of the Earth under the *Torrid Zone*, as ſome may imagine. That there hath not yet been I appeal to Experience, the Countries lying under the Courſe of the Sun, being at this day as fertile as ever they were, and wanting no more Moiſture now than of old they did; having as conſtant and plentiful Rains in their Seaſons as they then had. That they ſhall for the future ſuffer any more Drought than they have heretofore done, there is no reaſon to believe or imagine, the Face of the Earth being not altered, nor naturally alterable, as to the main, more at preſent than it was heretofore. I ſhall now add the Reaſon, why I think there can be no ſuch Exſiccation of the Earth in thoſe parts. It's true indeed, were there nothing to hinder them,

them, the Vapours exhaled by the Sun-beams in thoſe hot Regions, would be caſt off to the North, and to the South, a great way, and not fall down in Rain there, but toward the Poles; But the long and continued Ridges or Chains of exceeding high Mountains are ſo diſpoſed by the great and wiſe Creator of the World, as, at leaſt in our Continent, to run Eaſt and Weſt, as *Gaſſendus* in the Life of *Peireskius* well obſerves, ſuch are *Atlas*, *Taurus*, and the *Alps*, to name no more: They are, I ſay, thus diſpoſed as if it were on purpoſe to obviate and ſtop the Evagation of the Vapours Northward, and reflect them back again, ſo that they muſt needs be condenſed, and fall upon the Countries out of which they were elevated. And on the South-ſide, being near the Sea, it is likely that the Wind, blowing for the moſt part from thence, hinders their excurſion that way. This I ſpeak by preſumption, becauſe in our Country for at leaſt three quarters of the Year the Wind blows from the great *Atlantick* Ocean: which was taken notice of by *Julius Cæſar* in the Fifth of his Commentaries, *De Bello Gallico. Corus ventus, qui magnam partem omnis temporis in his locis flare conſuevit.*

As for any Deſiccation of the Sea, I hold that by mere natural Cauſes to be impoſſible, unleſs we could ſuppoſe a Tranſmutation of Principles or ſimple Bodies, which for Reaſons alledged in a former Diſcourſe I cannot allow. I was then, and am ſtill of Opinion, that God Almighty did at firſt create a certain and determinate number of Principles, or variouſly figured Corpuſcles, intranſmutable by the force of any natural Agent, even Fire itſelf, (which can only ſeparate the Parts of heterogeneous Bodies) yet not an equal number of each kind of theſe Principles, but of ſome abundantly more, as of *Water*, *Earth*, *Air*, *Æther*; and of others fewer, as of *Oyl*, *Salt*, *Metals*, *Minerals*, &c. Now that there may be ſome Bodies indiviſible by Fire, is, I think, demonſtrable. For how doth, or can Fire be conceived to divide, one can hardly imagine any other way than by its ſmall parts, by reaſon of their violent Agitation inſinuating themſelves into compound Bodies, and ſeparating their parts; which allowing, yet ſtill there is a term of Magnitude, below which it cannot divide, *viz.* it cannot divide a Body into ſmaller parts than thoſe whereof itſelf is compounded. For taking, ſuppoſe, one leaſt Part of Fire, 'tis clear that it cannot inſinuate itſelf into a Body as little or leſs than itſelf: and

and what is true of one is true of all: I ſay, we can imagine no other way than this, unleſs perchance by a violent ſtroke or ſhock, the parts of the Body to be divided may be put into ſo impetuous a motion as to fall in ſunder of themſelves into leſſer Particles than thoſe of the impellent Body are, which I will not ſuppoſe at preſent. Now it is poſſible, that the Principles of ſome other ſimple Bodies may be as ſmall as the Particles of Fire. But however that be, it is enough, if the Principles of ſimple Bodies be by reaſon of their perfect ſolidity naturally indiviſible. Such a ſimple Body, I ſuppoſe, Water ſeparated from all Heterogeneous Mixtures to be: and conſequently the ſame quantity thereof that was at firſt created, doth ſtill remain, and will continue always in deſpight of all natural Agents, unleſs it pleaſes the Omnipotent Creator to diſſolve it. And therefore there can be no Deſiccation of the Seas, unleſs by turning all its Water into Vapour, and ſuſpending it in the Air, which to do, what an immenſe and long-continuing Fire would be requiſite to the maintenance whereof all the inflammable Materials near the Superficies of the Earth would not afford Fuel enough. The Sun, we ſee, is ſo far from doing it, that it hath not made one ſtep towards it theſe four thouſand Years, there being in all likelihood as great

great a quantity of Water in the Ocean now as was immediately after the Flood: and conſequently there would probably remain as much in it, ſhould the World laſt four thouſand Years longer.

This Fixedneſs and Intranſmutability of Principles ſecures the Univerſe from Diſſolution by the prevailing of one Element over another, and turning it into its own Nature; which otherwiſe it would be in continual danger of. It ſecures likewiſe the perpetuity of all the *Species* in the World, many of which, if their Principles were tranſmutable, might by ſuch a change be quite loſt: And laſtly bars the Production or Creation of any new Species, as in the forementioned Treatiſe I have ſhewn.

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## CHAP. IV.

*Containing an Anſwer to the Second Queſtion, Whether ſhall this Diſſolution be effected by natural or by extraordinary Means, and what they ſhall be?*

2. AS to the Second Queſtion, Whether ſhall this Diſſolution be brought about and effected by natural or by extraordinary Means and Inſtruments, and what thoſe Means and Inſtruments ſhall be? I anſwer in brief, that the Inſtrumental Efficient of this Diſſolution ſhall be natural. For it is clear both by Scripture and Tradition, and agreed on all hands, that it ſhall be that Catholick Diſſolvent, *Fire*. Now to the being and maintenance of Fire, there are four things requiſite. 1. The active Principle or *Æther*. 2. *Air*, or a Nitrous *Pabulum* received from it: Theſe two being commixt together, are every-where at hand. 3. *Fuel*, which conſidering the abundance of

of combuſtible Materials, which are to be found in all places upon or under the Surface of the Earth, can no where be wanting. 4. The Accenſion and the ſudden and equal Diffuſion of this Fire all the World over. And this muſt be the Work of God, extraordinary and miraculous.

Such a Diſſolution of the World might indeed be effected by that natural Accident mentioned in the Anſwer to the Precedent Queſtion, *viz.* The Eruption of the Central Fire. But becauſe it is doubtful, whether there be any ſuch Fire in the middle of the Earth or no: and if there ever were, it is hard to give an account, how it could be maintained in that infernal Dungeon for want of Air and Fuel. And becauſe, if it ſhould break forth in the Conſiſtency of a thin Flame, it would in all likelihood ſpeedily like Lightning mount up to Heaven, and quite vaniſh away; unleſs we could ſuppoſe Floods, nay Seas of melted Materials, or liquid Fire, enough to overflow the whole Earth, to be poured forth of thoſe Caverns. For theſe Reaſons I reject that Opinion, and do rather think that the Conflagration ſhall be effected by a ſuperficial Fire. Tho' I muſt confeſs we read in *Tacitus*, *Annal.* 13. at the end, of a ſort of Fire that was not ſo apt to diſperſe and vaniſh. "——The City of the

the *Inhonians* in *Germany* (ſaith he) confederate with us was afflicted with a ſudden Diſaſter: for Fires iſſuing out of the Earth, burned Towns, Fields, Villages every-where, and ſpread even to the Walls of a Colony newly built, and could not be extinguiſhed neither by Rain, nor River-water, nor any other Liquor that could be employed, until for want of Remedy, or Anger of ſuch a Diſtraction, certain Peaſants caſt Stones afar off into it; then the Flame ſomewhat ſlacking, drawing near, they put it out with Blows of Clubs, and other like, as if it had been a wild Beaſt; laſt of all, they threw in Cloaths from their Backs, which the more worn and fouler they were, the better they quenched the Fire. I uſe Dr. *Hakewil*'s Tranſlation.

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## CHAP. VII.

### *The Third Queſtion anſwered. Whether ſhall this Diſſolution be Gradual and Succeſſive, or Momentaneous and Sudden?*

3. THE Third Queſtion is, *Whether ſhall this Diſſolution be gradual and ſucceſſive, or momentaneous and ſudden?*

I anſwer, The Scripture reſolves for the latter, *The day of the Lord ſhall come as a thief in the night:* a ſimilitude we have often repeated in Scripture, as in the tenth Verſe of this Chapter, in 1 *Theſſ.* 15. 2. *Rev.* 3. 3. and 16. 15. And the Reſurrection and Change of Things, it is ſaid ſhall be *in a moment, in the twinkling of an eye,* 1 Cor. 15. 52. Conſonant whereto both the *Epicureans* and *Stoicks* held their Diſſolutions of the World ſhould be ſudden and brief, as *Lucretius* and *Seneca* in the place 'fore-mentioned tell us. And it is ſuitable to the nature of Fire to make a quick diſpatch of things, ſuddenly to conſume and deſtroy.

And

And as it ſhall be ſudden, ſo alſo ſhall it be unexpected, being compared to the coming of the Flood in the Days of *Noah*, *Mat.* 24. 37, 38, 39. *But as the days of Noah were, ſo ſhall alſo the coming of the Son of man be. For as in the days that were before the flood, they were eating and drinking, marrying and giving in marriage, until the day that Noah entred into the ark: And knew not until the flood came and took them all away; ſo ſhall alſo the coming of the Son of man be.* And the raining of Fire and Brimſtone upon *Sodom.* Luke 17. Theſſal. 5. 3. *For when they ſhall ſay peace and ſafety, then ſudden deſtruction cometh upon them as travail upon a woman with child.* Now if it ſhall be thus ſudden and unexpected, it is not likely there ſhould be in Nature any manifeſt Tendency to it, or remarkable Signs and Forerunners of it: for ſuch muſt needs ſtartle and awaken the World into an expectation and dread of it. That there is at preſent no ſuch Tendency to Corruption, but that the World continues ſtill in as good ſtate and condition as it was two thouſand Years ago, without the leaſt impairment or decay, hath been, as we before noted, without any poſſibility of contradiction clearly made out and demonſtrated by Dr. *Hakewill* in his Apology: and therefore, arguing from the paſt to the future,

future, it will in all likelihood ſo continue two thouſand Years more, if it be ſo long to the Day of Doom; and conſequently that day (as the Scripture predicts) will ſuddenly and unexpectedly come upon the World. But if all theſe Prophecies (as Dr. *Hammond* affirms) be to be reſtrained only to the Deſtruction of *Jeruſalem*, and the *Jewiſh* Polity, without any further reſpect to the end of the World; then indeed from thence we can make no Inferences or Deductions in reference to that final Period.

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CHAP.

## CHAP. VIII.

### *The Fourth Queſtion Reſolved, Whether ſhall there be any Signs or Fore-runners of the Diſſolution of the World?*

4. THE Fourth Queſtion is, Whether ſhall there be any Signs or Fore-runners of the Diſſolution of the World?

In order to the Anſwering of this Queſtion, we ſhall diſtinguiſh Signs into Natural and Arbitrarious.

1. *Natural Signs*, ſo the *Aurora*, or Dawning of the Day, is a Sign of the Sun-riſing. Now if the Diſſolution be effected in the Courſe of Nature, and by Natural Means, there will be ſome previous natural Signs of it. An old Houſe will threaten Ruin before it falls. The natural Death of Men, and all Animals, hath its Harbingers, and old Men before their Diſſolution feel the Impreſſions of

Age; and proclaim to the World their approaching Fate by Wrinkles, Gray Hairs, and Dimneſs of Sight. But we have formerly ſhewn, That there is no Conſeneſcency or Declenſion in Nature; but that the World continues ſtill as firm and ſtaunch as it was Three thouſand Years ago; and why hereafter it ſhould founder and decay more than it hath done for ſo many Ages heretofore, what reaſon can be given? It is not therefore likely there ſhould be any Natural Signs of the Diſſolution of the World; and conſequently that it ſhall be effected by natural Means.

2. There are *Arbitrary Signs*, as a Garland hung out is a Sign of Wine to be ſold. Now if the Diſſolution of the World be effected by Supernatural and Extraordinary Means (as is moſt likely) the Signs of it muſt be Arbitrarious. For though they may be Natural Effects and Productions, yet would they not ſignifie the Deſtruction of the World, if they were not ordered by Providence to happen at that time, and predicted as Fore-runners of it; with which otherwiſe they have no Natural Connexion. Such Signs are *Matth.* 24. The Sun being darkened, and the Moon not giving her Light, and the Stars falling from Heaven, and the ſhaking of the

the Powers of Heaven. Theſe, and many other Signs of his Coming, we find mentioned in Scripture: but what the meaning of theſe Expreſſions may be, is not ſo clear: For though ſome of them may be taken in a Literal Senſe, yet it is manifeſt that others cannot. The Sun may indeed be ſo covered with a *Macula*, as to be quite obſcured; and thereupon the Moon neceſſarily loſe her Light, which ſhe borrows only from the Sun-beams: But how the Stars ſhould in a Literal Senſe fall down from Heaven, is inconceivable; it being almoſt demonſtratively certain, that moſt of them are bigger than the whole Earth. We may therefore, keeping as near as we can to the Letter, thus interpret them. There ſhall be great Signs in Heaven, diſmal Eclipſes and Obſcurations of the Sun and Moon; new Stars and Comets ſhall appear, and others diſappear, and many fiery Meteors be ſuſpended in the Air. The very Foundations of the Earth ſhall be ſhaken, and the Sea ſhall roar and make a noiſe. But I muſt not here diſſemble a great Difficulty: How can ſuch illuſtrious Signs and Fore-runners be reconciled to the ſuddenneſs and unexpectedneſs of Chriſt's coming, and the end of the World? *Luke* 21. 25. After the E-

vangeliſt had told us, *That there ſhall be Signs in the Sun, and in the Moon, and in the Stars — the Sea and the Waves roaring*; he adds, as a Conſequent thereof, *Verſe* 26. *Mens hearts failing them for fear, and for looking after thoſe things that are coming on the Earth.* And indeed, how could any Man poſſibly be buried in ſo profound a Lethargy of Senſleſsneſs and Security, as by ſuch ſtupendious Prodigies not to be rowſed and awakened to an expectation of ſome diſmal and tremendous Event? How could he ſing a *Requiem* to his Soul, and ſay Peace and Safety, when the World ſo manifeſtly threatens Ruin about his Ears? For the reconciling of theſe Expreſſions to this ſudden coming of our Saviour to Judgment, it were moſt convenient to accept them in the Figurative and Metaphorical Senſe. For if we underſtand them of the Ruin, and Devaſtations of Cities and Countries, and Changes of Governments, the Subverſions of Kingdoms and Commonwealths, the Falls and Depoſings of Princes, Nobles and Great Men; theſe happening more or leſs in every Age, though the ſerious and inquiſitive Chriſtian, who ſearches and underſtands the Scriptures, may diſcern them to be the Signs of the World's

*Ca-*

*Cataſtrophe*; yet the careleſs and inconſiderate, the vicious and voluptuous are not like to be at all ſtartled or moved at them, but may notwithſtanding, looking upon them as ordinary and inſignificant Accidents, *Dormire in utramque aurem*, ſleep ſecurely till the laſt Trump awaken them. Or it may be anſwered, That theſe Prophecies do belong to the Deſtruction of *Jeruſalem* only, and ſo we are not concerned to anſwer that Objection.

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## CHAP. IX.

### *The Fifth Queſtion anſwered; At what Period of Time ſhall the World be diſſolved?*

5. THE Fifth Queſtion is, At what Period of Time ſhall the World be diſſolved? I anſwer, This is abſolutely uncertain and indeterminable. For ſince this Diſſolution ſhall be effected by the extraordinary Interpoſition of Providence; it cannot be to any Man known, unleſs extraordinarily revealed. And our Saviour tells us, That of that Day and Hour knows no Man, no not the Angels of Heaven, *&c. Matth.* 24. 36. And again, *Acts* 1. 17. It is not for us to know the Times and the Seaſons, which the Father hath placed in his own power. And this Dr. *Hakewill* brings as an Argument that the World decays not, neither tends to Corruption; becauſe if it did, the time of its actual Diſſolution might be collected

ed and foretold; which, ſaith he, the Scripture denies. We may invert this Argumentation, and infer; Becauſe the World doth not decay, therefore the time of its Diſſolution cannot be known.

But yet notwithſtanding this, many have ventured to foretel the Time of the End of the World, of whom ſome are already confuted, the Term prefixt being paſt, and the World ſtill ſtanding. *Lactantius* in his time ſaid, *Inſtitut. lib. 7. cap. 15. Omnis expectatio non amplius quàm ducentorum videtur annorum; The longeſt expectation extends not further than two hundred years.* The continuance of the World more than a Thouſand years ſince convinces him of a groſs Miſtake. *Paulus Grebnerus* a high Pretender to a Spirit of Propheſie, ſets it in the Year 1613. induced thereto by a fond Conceit of the Numeral Letters in the Latin Word *Judicium.* Other Enthuſiaſtical Perſons of our own Countrey have placed it in the Years 1646. and 1656. The event ſhews how ungroundedly and erroneouſly. Others there are, whoſe Term is not yet expired, and ſo they remain ſtill to be confuted. As thoſe who conceit that the end of the World ſhall be when the Pole-Star ſhall come to touch the Pole of the *Equator*, *De Mundo.*

*Equator*, which (ſay they) ever ſince the time of *Hipparchus* hath approached nearer and nearer to it. That it doth ſo I am not ſatisfied; but if it doth, it is meerly accidental, and hath no Connexion with the End of the World. But the moſt famous Opinion, and which hath found moſt Patrons and Followers even amongſt the Learned and Pious, is that of the Worlds duration for Six thouſand years. For the ſtrengthening of which Conceit they tell us, That as the World was created in ſix days, and then followed the Sabbath, ſo ſhall it remain ſix thouſand years, and then ſhall ſucceed the Eternal Sabbath. *Hebr.* 4. 9. Ἄρα ἀπολείπεται σαββατισμὸς, &c. *There remains therefore a Reſt or Sabbath to the People of God.* Here we ſee that the Apoſtle inſtitutes a Compariſon between the Heavenly Reſt and the Sabbath. Therefore as God reſted upon the Seventh Day, ſo ſhall all the World of the Godly reſt after the Six Thouſandth year. *For he that hath entred into his reſt, ceaſeth from all his Works as God did from his.* Of this Opinion were many of the Ancient Fathers, as I ſhewed before, grounding themſelves upon this Analogy between the ſix days of the Creation and the Sabbath;

bath; and the ſix thouſand years of the Worlds duration, and the Eternal Reſt: For, ſaith *Irenæus* in the place before quoted, *Hoc autem*, (that is, the Hiſtory of the ſix days Creation and ſucceeding Sabbath) *eſt & præteritorum narratio, & futurorum prophetia. Dies enim unus mille annos ſignificat, ſicut Scriptura teſtatur:* 2 Pet. 3. 8. Pſal. 90. 4. the Scriptures reckoning days of One thouſand years long, as in *Verſe* 8. of this Chapter, and in *Pſal.* 90. 4. This is likewiſe a received Tradition of the *Jewiſh Rabbins*, regiſtred in the *Talmud*, in the Treatiſe *Sanhedrim*, delivered (as they pretend) by the Prophet *Elias* the *Tiſhbite* to the Son of the Woman of *Sarepta*, whom he raiſed from the Dead, and by him handed down to Poſterity. I rather think with *Reuterus*, that the Author of it was ſome *Rabbi* of that Name. The Tradition is, *Sex millia annorum erit mundus: & uno millenario vaſtatio*, i. e. *Sabbathum Dei: Duo millia inane: Duo millia Lex: Duo millia dies Meſſiæ. Two thouſand years vacuity: Two thouſand years of the Law: Two thouſand years the days of the Meſſiah.* But they ſhoot far wide: For according to the leaſt account, there paſſed a far greater number of years before the Law was given,

2513.

2513. ſaith *Reuterus*, and on the contrary leſs time from the Law to the Exhibition of the Meſſiah. All theſe Proofs laid together, do ſcarce ſuffice to make up a probability. Neither do thoſe Rabbinical Collections from the ſix Letters in בראשית the firſt word of *Geneſis*, or from the ſix *Alephs* in the firſt Verſe of that Book, each ſignifying a thouſand years; or from the ſix firſt Patriarchs in the order of the Genealogy to *Enoch*, who was caught up to Heaven, and found no more, add much weight to this Opinion. S. *Auſtin* very modeſtly concludes, after a Diſcuſſion of this Point concerning the Worlds duration, *Ego tempora dinumerare non audeo: nec aliquem Prophetam de hac re numerum annorum exiſtimo præfiniviſſe. Nos ergo quod ſcire nos Dominus noluit libenter neſciamus. I dare not calculate & determine times: neither do I think that concerning this matter, any Prophet hath predicted and defined the number of years. What therefore the Lord would not have us to know, let us willingly be ignorant of.*

But though none but preſumptuous perſons have undertaken peremptorily to determine that time, yet was it the common and received Opinion and Perſwaſion of the Ancient Chriſtians, that that day was not

not far off? and had they been to limit it, they would hardly have been induced to ſet the term ſo forward, and remote from their own Age, as by experience we find it proves to be, but in their own times, or ſhortly after; and many places of Scripture ſeem to favour that Opinion, ſo that ſome have preſumed to ſay, that the Apoſtles themſelves were at firſt miſtaken in this particular, till after further illumination they were better informed. But though this be too bold a Conceit, yet that the Churches, at leaſt ſome of them, did at firſt miſtake the Apoſtles meaning in their Sermons and Epiſtles concerning this Point, and ſo underſtand them, as to think that the End of the World and final Judgment was at hand, appears from 2 *Theſſ.* 2. 2. *I beſeech you, Brethren, that ye be not ſoon ſhaken in mind, or be troubled, neither by Spirit, nor by Word, nor by Letter, as from us, as that the day of Chriſt is at hand.* We ſee the Apoſtle labours to rectifie, and for the future to prevent this Miſtake: ſo likewiſe the Apoſtle *Peter* in the 8th and 9th Verſes of this Chapter. And yet this Opinion had taken ſuch deep root in them, that it was not eaſie to be extirpated; but continued for ſome Ages in the Church. Indeed there are ſo many places

places in the New Teſtament which ſpeak of the Coming of Chriſt as very near, that if we ſhould have lived in their time, and underſtood them all as they did, of his Coming to Judge the World, we could hardly have avoided being of the ſame Opinion. But if we apply them (as Dr. *Hammond* doth) to his Coming to take Vengeance on his Enemies, then they do not hinder, but that the Day of Judgment, I mean the General Judgment, may be far enough off. So I leave this Queſtion unreſolved, concluding that when that Day will come God only knows.

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CHAP.

## CHAP. X.

### *How far this Conflagration ſhall extend.*

6. A Sixth Queſtion is, How far ſhall this Conflagration extend? Whether to the Ethereal Heavens, and all the Hoſt of them, Sun, Moon and Stars, or to the Aereal only?

I Anſwer, If we follow Ancient Tradition not only the Earth, but alſo the Heavens and heavenly Bodies will be involved in one common Fate, as appears by thoſe Verſes quoted out of *Lucretius*, *Ovid*, *Lucan*, &c.

Of Chriſtians ſome exempt the Ethereal Region from this Deſtruction: for the two following Reaſons, which I ſhall ſet down in *Reuterus*'s words. 1. Becauſe in this Chapter the Conflagration is compared to the Deluge in the time of *Noah*. But the Deluge extended not to the upper Regions of the Air, much leſs to the Heavens, the Waters ariſing only fifteen Cubits above the tops of the Mountains, if ſo much. Therefore neither

ther ſhall the Conflagration tranſcend that term. So *Beza* upon 2 *Pet.* 3. 6. *Tantum aſcendet ille ignis quantum aqua altior ſupra omnes montes. That fire ſhall aſcend as high as the Waters ſtood above the Mountains.* This paſſage I do not find in the laſt Edition of his Notes. The ordinary Gloſs alſo upon theſe words, 2 Theſſ. 1. 2. *In flaming fire rendring vengeance,* ſaith *Chriſtum venturum præcedet ignis in mundo, qui tantum aſcendet quantum aqua in diluvio. There ſhall a fire go before Chriſt when he comes, which ſhall reach as high as did the Water in the Deluge.* And S. *Auguſtine De Civit. Dei lib.* 20. *cap.* 18. *Petrus etiam commemorans factum ante diluvium, videtur admonuiſſe quodammodo, quatenus in fine hujus ſeculi iſtum mundum periturum eſſe credamus.* Peter *alſo mentioning the Ancient Deluge, ſeems in a manner to have adviſed us how far at the conſummation of time, we are to believe this World ſhall periſh.*

But this Argument is of no force, becauſe it is not the Apoſtle's deſign in that place to deſcribe the limits of the Conflagration, but only againſt Scoffers; to ſhew, that the World ſhould one day periſh by fire, as it had of old been deſtroyed by Water.

2. The ſecond Reaſon is, Becauſe the Heavenly Bodies are not ſubject to Paſſion, alteration

ration or corruption. They can contract no filth, and ſo need no expurgation by fire.

To this we anſwer, not in the words of *Reuter*, but our own, That it is an idle and ill grounded conceit of the *Peripateticks*, That the Heavenly Bodies are of their own nature incorruptible and unalterable: for on the contrary it is demonſtrable, that many of them are of the ſame nature with the Earth we live upon, and the moſt pure, as the Sun, and probably too the fixt Stars, ſuffer Alterations; *maculæ* or opaque Concretions being commonly generated and diſſolved in them. And *Comets* frequently, and ſometimes *New Stars* appear in the Etherial Regions. So that theſe Arguments are inſufficient to exempt the Heavens from Diſſolution; and on the other ſide many places there are in Scripture which ſeem to ſubject them thereto: As *Pſal.* 102. 25, 26. recited *Hebr.* 1. 10. which hath already often been quoted, *The Heavens are the Works of thy Hands; They ſhall periſh.* Matth. 24. 35. *Heaven and Earth ſhall paſs away.* Iſa. 65. 17. & 51. 6. *The Heavens ſhall vaniſh away like ſmoke.* Yet am I not of opinion, that the laſt Fire ſhall reach the Heavens; They are too far diſtant from us to ſuffer by it: nor indeed doth the Scripture affirm it; but where it mentions the Diſſolution

tion of the Heavens, it expreſſeth it by ſuch Phraſes as ſeem rather to intimate, that it ſhall come to paſs by a conſeneſcency and decay, than be effected by any ſudden and violent means. *Pſal.* 102. 25, 26. *They all ſhall wax old as doth a Garment*, &c. Though I confeſs nothing of Certainty can be gathered from ſuch Expreſſions; for we find the ſame uſed concerning the Earth; *Iſa.* 51. 6. *The Heavens ſhall vaniſh away like ſmoke, and the Earth ſhall wax old as doth a garment.* The heavenly Bodies are none of them uncorruptible and eternal; but may in like manner as the Earth be conſumed and deſtroyed, at what times and by what means, whether Fire or ſome other Element, the Almighty hath decreed, and ordered.

CHAP.

## CHAP. XI.

### *Whether ſhall the Whole World be conſumed and annihilated, or only refined and purified?*

THere remains now only the Seventh Queſtion to be reſolved, Whether ſhall the World be wholly conſumed, burnt up and deſtroyed, or annihilated; or only refined, purified, or renewed? To this I anſwer, That the latter part ſeems to me more probable, *viz.* That it ſhall not be deſtroyed and annihilated, but only refined and purified. I know what potent Adverſaries I have in this caſe. I need name no more than *Gerard* in his Common Places, and Dr. *Hakewil* in his Apology and the Defence of it, who contend earneſtly for the Abolition or Annihilation. But yet upon the whole matter, the Renovation or Reſtitution ſeems to me moſt probable, as being moſt conſonant to *Scripture*, *Reaſon*, and *Antiquity*. The Scripture ſpeaks of an ἀποκατάστασις, or Reſtitution, *Acts* 3. 21. *Whom the Heavens muſt*

*contain until the time of the reſtitution of all things.* Speaking of our Saviour: and παλιγγενεσία, or Regeneration of the World, the very word the *Stoicks* and *Pythagoreans* uſe in this caſe, Mat. 19. 28, 29. *Verily, I ſay unto you, That ye which have followed me, in the regeneration, when the Son of man ſhall ſit on the Throne of his glory, ye alſo ſhall ſit upon twelve Thrones*, &c. Pſal. 102. 26. *As a veſture ſhalt thou change them, and they ſhall be changed.* Which words are again taken up and repeated, *Heb.* 1. 12. Now it is one thing to be changed, another to be annihilated and deſtroyed. 1 *Cor.* 7. 31. παράγει τὸ σχῆμα τοῦ κόσμου τούτου *The faſhion of this world paſſeth away.* As if he had ſaid, It ſhall be tranſfigured, or its outward form changed, not its matter or ſubſtance deſtroyed. Iſa. 65. 17. *Behold I create new Heavens and a new Earth, and the former ſhall not be remembred, nor come into mind.* Iſa. 66. 22. As *the new Heavens and new Earth, which I ſhall make, ſhall remain before me.* To which places the Apoſtle *Peter* ſeems to refer in thoſe words, 2 Pet. 3. 13. *Nevertheleſs we, according to his promiſe, look for new Heavens, and a new Earth*, wherein dwelleth righteouſneſs. This new Heaven and new Earth we have alſo mentioned, *Rev.* 21. 1. *And I ſaw a new Heaven and a new Earth:*

*Earth: for the first Heaven and the first Earth were passed away, and there was no more Sea.* These places, I confess, may admit of an Answer or Solution by those who are of a contrary Opinion, and are answered by Doctor *Hakewil:* yet all together, especially being back'd by ancient Tradition, amount to a high degree of probability. I omit that place, *Rom.* 8. 21, 22. *The creature itself also shall be delivered from the bondage of corruption into the glorious liberty of the sons of God*: tho' it be accounted the strongest proof of our Opinion, because of the obscurity and ambiguity thereof.

2. For Antiquity, I have already given many Testimonies of the ancient Fathers and Doctors of the Church, and could, if need were, produce many more, the whole stream of them running this way. And tho' Dr. *Hakewill* saith, That if we look back to higher times before S. *Hierome*, we shall not easily find any one who maintained the World's Renovation: yet hath he but two Testimonies to alledge for its Abolition; the one out of *Hilary* upon the Psalms, and the other out of *Clemens* his *Recognitions*. To this Restitution of the World after the Conflagration many also of the Heathen Philosophers bear witness; whose Testimonies Mr. *Burnet* hath exhibited in his *Theory* of

the *Earth*, lib. 4. cap. 5. Of the Stoicks, *Chrysippus de Providentia*, speaking of the Renovation of the World, saith, Ἡμᾶς μετὰ τὸ τελευτῆσαι, πάλιν περιόδων τινῶν εἰλημμένων χρόνου, εἰς ὃ νῦν ἐσμὲν ἀποκαταστήσεσθαι σχῆμα. *We after death, certain Periods of time being come about, shall be restored to the form we now have.* To *Chrysippus Stobæus* adds *Zeno* and *Cleanthes*, and comprehends together with Men all natural things, Ζήνωνι καὶ Κλεάνθει, καὶ Χρυσίππῳ ἀρέσκει τὴν οὐσίαν μεταβάλλειν, ὅλῃ εἰς σπέρμα, τὸ πῦρ καὶ πάλιν ἐκ τούτου τοιαύτην ἀποτελεῖσθαι τὴν διακόσμησιν οἵα πρότερον ἦν. Zeno *and* Cleanthes *and* Chrysippus *were of Opinion, That the Nature or Substance of Things changes into Fire, as it were into a Seed; and out of this again, such a World or Frame of Things is effected as was before.* This Revolution of Nature *Antoninus* in his Meditations often calls τὴν περιοδικὴν ταλιγγενεσίαν τῶν ὅλων, *The Periodical Regeneration of all things.* And* *Origen* against *Celsus* saith of the *Stoicks* in general, Φασὶ δὲ οἱ ἀπὸ τῆς στοᾶς κατὰ περίοδον ἐκπύρωσιν τοῦ παντὸς γίνεσθαι, καὶ ἑξῆς αὐτῇ διακόσμησιν πάντ' ἀπαράλλακτα ἔχουσαν ὡς πρὸς τὴν ἑτέραν διακόσμησιν. The *Stoicks* say, *That at certain Periods of time there is a Conflagration of the Universe; and after that a Restitution thereof having exactly the same Disposition*

|| *Apud Lactant. l. 7. c. 23.*

* *Lib. 5*

*Disposition and Furniture the former World had.* More to the like purpose concerning the *Stoicks*, we have in † *Eusebius* out of *Numenius*. *Nature*, saith he, *returns*, Εἰς τὴν ἀνάστασιν ἐκείνην τὴν ποιοῦσαν ἐνιαυτὸν τὸν μέγιστον, καθ' ὃν ἀπ' αὐτῆς μόνης εἰς αὐτὴν πάλιν γίνεται ἡ ἀποκατάστασις ἐπανελθοῦσα δὲ κατὰ τάξιν ἀφ' οἵας διακοσμεῖν ὡσαύτως ἤρξατο, κατὰ λόγον πάλιν τὴν αὐτὴν διεξαγωγὴν ποιεῖται, τῶν τοιούτων περιόδων ἐξ αἰδίου γενομένων ἀκαταπαύστως, *to the Resurrection which makes the Great Year, wherein there is again a restitution made from it self alone to it self. For returning according to the order wherein it began first to frame and dispose things, (as reason would) it again observes the same Oeconomy or Administration; the like Periods returning eternally without ceasing.* He that desires more Authorities of the Heathen Philosophers and Poets in confirmation of the World's Restitution after the Conflagration, may consult the same Mr. *Burnet* in the place forequoted; where he also shews, that this Doctrine of the Mundane Periods was received by the *Grecians* from the Nations they call barbarous. *Pythagoras*, saith *Porphyry*, brought it first into *Greece*: and *Origen* witnesseth of the *Egyptian* Wise Men that it was delivered by them. *Laertius* out of *Theopompus* relates,

† Præp. Evang. l. 15.

That the *Perſian Magi* had the ſame Tradition: and *Beroſus* ſaith, that the *Chaldeans* alſo. In fine, among all the barbarous Nations, who had among them any Perſon or Sect, and Order of Men, noted for Wiſdom or Philoſophy, this Tradition was current. The Reader may conſult the Book we refer to, where is a notable paſſage taken out of *Plutarch*'s Tractate, *Di Iſide & Oſtride*, concerning a War between *Oromazes*, and *Arimanius*, ſomewhat parallel to that mentioned in the Revelation between *Michael* and the *Dragon*.

3. The Reſtitution of the World ſeems more conſonant to Reaſon than its Abolition. For if the World were to be annihilated, what needed a Conflagration? Fire doth not deſtroy or bring things to nothing, but only ſeparate their parts. The World cannot be aboliſhed by it, and therefore had better been annihilated without it. Wherefore the Scripture mentioning no other Diſſolution than is to be effected by the Inſtrumentality of Fire, its clear, we are not to underſtand any utter Abolition or Annihilation of the World, but only a Mutation and Renovation, by thoſe phraſes of *periſhing*, *paſſing away*, *diſſolving*, *being no more*, &c. They are to be no more in that ſtate and condition they are now in.

2. There

2. There must be a material Heaven, and a material Hell left. A place for the glorified Bodies of the Blessed to inhabit and converse in; and a place for the Bodies of the Damned, a Κολαστήριον, or Prison for them to be shut up in. Now if the place of the Blessed be an Empyreal Heaven far above these visible Heavens, as Divines generally hold; and the place of the Damned be beneath, about the middle of the Earth; as is the Opinion of the School-men, and the Church of *Rome*, and as the name *Inferi* imports, and as the ancient Heathen described their *Tartarus*,

——εἰς τάρταρον ἠερόεντα Hom. Il.
Τῆλε μάλ' ἦχι βάθιστον ὑπὸ χθονός ἐστι βέρεθρα,
Τόσσον ἔνερθ' Ἀΐδεω ὅσσον οὐρανὸς ἐς' ὑπὸ γαίης.

Then when all the intermediate Bodies shall be annihilated, what a strange Universe shall we have? Consisting of an immense Ring of Matter, having in the middle a vast vacuity, or space void of all Body, save only one small point for an infernal Dungeon. Those that are of this Opinion have too narrow and mean thoughts of the Greatness, I had almost said Immensity of the Universe, the

glorious and magnifick Products of the Creator's Almighty Power: and are too partial to themſelves, to think the whole World was created for no other end but to be ſerviceable to Mankind: But of this I have ſaid ſomewhat in a former Diſcourſe, and therefore ſhall not at preſent enlarge upon it.

But let us hear what they have to ſay for the *Abolition*.

*Hakewil's Apol. l. 4. c. 13. ſect. 5.*

Their firſt and moſt weighty Argument is taken from the *End of the World's Creation*, which was partly and chiefly the Glory of the *Creator*, and partly the uſe of Man, the Lord Deputy, as it were, or *Viceroy* thereof. Now for the *Glory* of the *Creator*, it being by the admirable Frame of the World manifeſted unto Man, Man being removed out of the World, and no Creature being capable of ſuch a Manifeſtation beſides him, we cannot imagine to what purpoſe the Frame itſelf ſhould be left, and reſtored to a more perfect Eſtate. The other *End*, being for *Man's Uſe*, either to ſupply his Neceſſity in matter of Diet, of Phyſick, of Building, of Apparel; or for his Inſtruction, Direction, Recreation, Comfort and Delight; or laſtly, that therein, as in a Looking-glaſs he might contemplate the Wiſdom, the Goodneſs and Power of God: when he ſhall attain that bleſſed Eſtate, as he ſhall have no further uſe

uſe of any of theſe, enjoying perfect Happineſs and ſeeing God as he is, face to face, the ſecond or ſubordinate End of the World's Being muſt needs be likewiſe fruſtrate. And what other End can be given or conceived for the remaining or reſtoring thereof? *&c.*

To this I anſwer, there may be an end of the reſtoring of the World, tho' we are not able to find out or determine what. We are too ſhort-ſighted to penetrate the Ends of God. There may be a new Race of rational Animals brought forth to act their parts upon this Stage, which may give the Creator as much Glory as Man ever did or could. And yet if there ſhould be no material and viſible rational Creature made to inhabit the Earth, there are ſpiritual and intellectual Beings, which may be as buſie, and as much delighted in ſearching out, and contemplating the Works of God in this new Earth, and rendring him the Praiſe of his Wiſdom and Power as Man could be. Theſe things we may conjecture; but we muſt leave it to the only wiſe God to determine what uſe ſhall be made of it. It ſeems to me to be too great preſumption, and over-valuing our ſelves to think that all this World was ſo made for us, as to have no other end of its Creation; or that God could not be glorified but by us.

This

This firſt and principal Argument being anſwered, the ſecond admits of an eaſie Solution. They enquire whether the Vegetables, and Creatures endued with Senſe ſhall all be reſtored, or ſome only? namely ſuch as ſhall be found in being at the Day of Judgment. If all, where ſhall we find Stowage for them? Surely we may in this caſe properly apply that which the Evangeliſt in another uſeth figuratively, if they ſhould all be reſtored, even the World itſelf could not contain the things which ſhould be reſtored. If ſome only, then would I gladly know, why thoſe ſome ſhould be vouchſafed this great Honour, and not all, or how thoſe Creatures without a Miracle ſhall be reſtrain'd from propagating and multiplying, and that infinitely in their kinds by a perpetual Generation. Or laſtly, How the ſeveral Individuals of theſe kinds, ſhall contrary to their primitive Natures, live and dure immortally?

To all this I anſwer, That not only all Animals, but all Vegetables too, yea, and their Seeds alſo, will doubtleſs be mortified and deſtroyed by the violence of the Conflagration; but that the ſame ſhould be reſtored, and endued with eternal life, I know no reaſon we have to believe; but rather that there ſhould be new ones produced, either

either of the ſame with the former, or of different kinds, at the will, and by the power of the Almighty Creator, and for thoſe Ends and Uſes for which he ſhall deſign them. This Queſtion being anſwered in this manner, all that follows concerning the Earth remaining without any Furniture or Inhabitants, *&c.* falls to the Ground. So I have diſpatch'd theſe Seven Queſtions concerning the Diſſolution of the World, there remains now only the Inference or Uſe of the precedent Doctrine.

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CHAP.

## CHAP. IX.

### *The Apoſtle's Inference from the precedent Doctrine.*

I Come now to the *Inference* the Apoſtle makes from the precedent Doctrine, *What manner of perſons ought we to be in all holy converſation and godlineſs?* One word here needs a little explication, and that is *holy*; What is meant by a *holy* converſation.

Holineſs is an Equivocal Term. It is attributed either to God, or to the Creature. When it is attributed to God, it ſignifies either,

1. The unſpotted Purity of his Nature, and the conſtant and immutable rectitude of his Will. So it is taken, 1 *John* 3.3. *And every man that hath this hope in him purifieth himſelf as he is pure:* and 1 Pet. 1. 15. *As he which called you is holy, ſo be ye holy in all manner of converſation: Becauſe it is written, be ye holy for I am holy.* Pſal. 145. 17. *The Lord is righteous in all his ways, and holy in all his works.*

2. His

2. His Sovereign Majeſty and Greatneſs, appearing in his tranſcendent Wiſdom and Power, in his Supreme and Abſolute Dominion over all things: in reſpect whereof, he is called the *Holy One of Iſrael*, and his *Name* is ſaid to be *Holy*: that is, to be invoked with the greateſt reverence. *Holy and reverend is his Name.* Becauſe of this his Greatneſs and Excellency he is to be worſhipped and adored with the moſt ſubmiſſive humility and veneration, with a tranſcendent and incommunicable Worſhip and Devotion.

When Holineſs is attributed to Creatures, it ſignifies either an Inherent and Inward, or a Relative or Outward, Holineſs.

1. Inherent or Inward Holineſs is a Conformity of Heart and Life to the Will of God: or as * others define it, An habitual Frame of Mind: whereby we are fitted for Vertuous Actions, but more eſpecially for the Duties of Religion: Indeed Holineſs doth always include a reference to God.

* *Biſhop Wilkins's Univerſ. Charact.*

2. Relative or Outward Holineſs reſults from a Separation and ſetting a-part any thing from a prophane and common, and applying it to a Sacred or Religious Uſe. For the Majeſty of God, who at firſt created, and continually ſuſtains and governs all things, being ſo great and inviolable, all Perſons, Things,

Things, and Times, and Places, and Ceremonies ſeparated and appropriated to his Service and Worſhip, are by all Nations eſteemed Sacred, and to have a Character of Holineſs imprinted on them.

By Holineſs in this place, is to be underſtood an *inherent* Holineſs, which is well de-
*De Sacrif.* *l.* 1. *c.* 1. fined by Dr. *Outram*, a Conformity of Heart and Life to the Will of God. I ſhall not diſcourſe at large concerning a holy Converſation, nor inſtance particulars wherein it conſiſts. That would be to write a Body of Practical Divinity: I ſhall therefore at preſent ſuppoſe the Reader ſufficiently inſtructed in that. My buſineſs ſhall be to ſhew the ſtrength of the Apoſtle's Inference.

It may be ſaid, How doth this Diſſolution concern us, who may perchance be dead and rotten a thouſand Years before it comes? What have we to do with it?

I anſwer, It concerns us, 1. Becauſe it's poſſible it may happen in our times; it may ſurprize us before we are aware. The preciſe time thereof is uncertain. And it ſhall be ſudden and unexpected, coming as a Thief in the Night, as we have before ſhewn; therefore we ought always to be upon our guard, *to have our loyns girt about and our lights burning.* This uſe the Scripture in many places makes of the uncertainty,

tainty of the time of Christ's coming, *Luke* 12. 40. *Be ye therefore ready: for the Son of Man cometh at an hour when ye think not,* Luke 21.34,35. *And take heed to your selves, lest at any time your hearts be over-charged with surfeiting and drunkenneß, and cares of this life, and so that day come upon you unawares. For as a snare shall it come on all them that dwell on the whole earth.* Parallel whereto are *Matth.* 24. 42. and *Mark* 13. 33, 35. That it shall come is certain, when it shall come is uncertain, and it every day draws nearer and nearer, therefore it is not wisdom to remove the evil day far from us: and as in reference to the day of Death, it is an usual and prudent advice, so to live every day, as if it were our last day; or at least, as we would not be afraid to do should it be so: because we are sure, that one day will be our last, and for ought we know, the present may be it: so likewise it is rational Counsel in respect of the End of the World, so to prepare our selves for it by a holy Conversation, that we may get above the terror and dread which will otherwise attend the apprehension of the approach of it: and that we may be provided against the worst that may follow; and be secure come what can come.

*Secondly,*

*Secondly*, It concerns us, ſhould it be a thouſand Years to come. Becauſe then is the general Reſurrection both of the juſt and unjuſt, *Acts* 24. 15. and the general Judgment, *When we muſt all appear before the dreadful tribunal of Chriſt, that every one may receive the things done in his body, according to that he hath done, whether it be good or bad.* 2 *Cor.* 5. 10. which, *Rom.* 2. 5. is called *the revelation of the righteous judgment of God. Who will render to every man according to his deeds*, &c. Upon this account, I ſay, it concerns us much how we have our Converſation here.

I. *Firſt*, As we hope to be acquitted at that day, and to enter into thoſe new Heavens, in which dwells righteouſneſs. Holineſs is a neceſſary condition and antecedent to happineſs. Neceſſary I ſay,

1. By God's appointment, *Heb.* 12. 14. *Follow peace with all men, and holineſs, without which no man ſhall ſee the Lord.* Rom. 6. 22. *Have your fruit unto holineſs, and the end eternal life.* Pſal. 50. ult. *To him that ordereth his converſation aright, will I ſhew the ſalvation of God.* Eternal Life is the Gift of God. He is not obliged to beſtow it upon any Man. He may make what Condition he pleaſes for the obtaining of it. No Man

Man hath any Right to it: No Man can lay any claim to it, but from this Donation, and from the performance of theſe Conditions. Rev. 22. 14. *Bleſſed are they that do his commandments, that they may have right to the tree of life, and may enter in through the gates into the city. For without are dogs and whoremongers, and ſorcerers,* &c. All the Right they have depends upon God's Promiſe, which is conditionate, and accrues to them by the performance of the Condition, which is the doing of his Commandments.

2 Neceſſary, not only by God's appointment, but in the very nature of the thing. Holineſs is the very quality and complexion of Heaven. No Man without it is qualified to be a ſubject of that Kingdom: For thereinto nothing that is impure or unclean can enter. Revel. 21. 27. *And there ſhall in no wiſe enter into it* [ the New Jeruſalem ] *any thing that defileth, neither whatſoever worketh abomination.* In this *new Heaven dwelleth righteouſneſs,* 2 Pet. 3. 15. Therefore 1 John 3. 3. *Every man that hath this hope in him, purifieth himſelf as he is pure.* Heaven would naturally ſpue out and eject a wicked Perſon, as one heterogeneous to it. Heaven and Hell are not more diſtant in Place, than they are in Nature. There is

not more antipathy between fire and water, between light and darkneſs, between ſtreight and crooked, neither are they more incompatible, or do more naturally reſiſt and expel one another, than holineſs which is the quality of Heaven, and wickedneſs which is the diſpoſition and temper of Hell. Some do think Heaven to be rather a ſtate, than a place; and that he that is partaker of the Divine Nature hath Heaven within him. This is true, but this is not all. The whole Notion of Heaven comprehends both a ſtate and a place. A Man muſt be in a heavenly ſtate, before the local Heaven can receive him, or he brook it. Heaven without him would be no Heaven to the Man who hath not Heaven within him. A wicked Perſon could find no buſineſs or employment in Heaven; nothing to ſatisfie his corrupt and depraved affections, inclinations, and appetites. He would there meet with no ſuitable company; no perſons whoſe converſation he could take any delight and complacency in, but rather hate and abhor. *For what fellowſhip hath righteouſneſs with unrighteouſneſs? or what communion hath light with darkneſs?* 2 Cor. 6. 14. Like naturally loves like, and unites with it, and doth refuſe, reſiſt, and hate that which is unlike it. For every thing is made to love itſelf; and conſequently whatſoever

ſoever reſembles and comes near it, and is as it were a replication of it; and to hate the contrary. As therefore we would be glad to be Partakers of the bleſſedneſs of the local Heaven, ſo let us endeavour to get into our Minds and Spirits the qualities and conditions of Heaven; that ſo we may be fit Subjects for that Kingdom, fit Companions for that Society. *This is the time allotted us to purifie our ſelves from all filthineſs both of fleſh and ſpirit, and to perfect holineſs in the fear of God.* There is no invention in the Grave whither we are going, *Eccleſ.*9.10. *Upon this moment depends eternity. As the tree falls ſo it it lies*, Eccleſ. And as Death leaves, ſo will Judgment find us. *Quando iſthinc exceſſum fuerit, nullus jam locus pœnitentiæ eſt. Hîc vita aut amittitur, aut tenetur: Hîc ſaluti æternæ cultu Dei & fructu fidei providetur.* Cyprian Serm. de Immortal. *After we ſhall depart hence there remains no more place for repentance. Eternal life is here, either loſt or won. Here proviſion is made for everlaſting ſalvation by the worſhip of God, and fruit of faith. We muſt work while it is day, the night* [of death] *cometh wherein no man can work*, John 9.4. And therefore the time our Bodies ſhall reſt in the Grave, ſhould it be a thouſand Years, will little avail us: for if the Soul be mean while awake,

the certain and dreadful expectation of the Sentence of Condemnation to an eternal Hell at the Day of Judgment, will be little leſs afflictive than the Torments thereof themſelves. I might add by way of Digreſſion, that Sin and Wickedneſs is naturally productive of Hell in the Soul. A wicked Man carries Hell in his Breaſt. Sin neceſſarily infers Miſery: It is contrary to the nature of the Soul, and whatſoever is ſo muſt needs be grievous. Diverſion and Non-Attention to his Condition, is the wicked Man's only Security: I have heard it often from a * great Divine in his Sermons, *That there is but a Thought's diſtance between a wicked Man and Hell.* For do but fix and bind his Thoughts to the Conſideration of his Life and Actions, and he will anticipate Hell himſelf, he ſhall need no infernal Furies to laſh him, he will be his own Tormentor: Such a Man's Preſſures will be heavy enough, ſhould the Divine *Nemeſis* ſuperadd no more. The Reaſon of this I have given in a former Diſcourſe, and therefore ſhall now omit what elſe might have been added on this particular.

* Doctor *Whitchcot.*

II. Secondly, It much concerns us, upon account of the future Judgment which ſhall be at the Diſſolution of the World, to have our Con-

Converſation in all Holineſs, as we deſire to avoid that Shame and Miſery which will then otherwiſe certainly befal us.

1. As we deſire to avoid that Shame which will cover our Faces at that day. If here Shame and Diſgrace be more grievous and inſupportable than Death itſelf, what will it be then, when the Soul ſhall be rendred more quick and apprehenſive and ſenſible of ſuch Impreſſions? There is nothing ſhameful but ſin, nothing elſe hath any natural Turpitude in it. Shame follows Sin as the Shadow doth the Body: He that will commit the one cannot avoid the other. Therefore ſuch wicked Perſons as have not quite renounced Modeſty, and loſt all Sence of Shame, eſpecially if guilty of ſecret Crimes, the Conſideration of a future Judgment would be a powerful Curb to reſtrain them from Sin for the future: becauſe then *God will* produce and *bring to light the hidden things of darkneſs, and diſcloſe and make manifeſt the counſels of all hearts.* 1 Cor. 4. 5. Then *he will judge the ſecrets of men by Jeſus Chriſt*, Rom. 2. 16. *Then will he bring every work into judgment, with every ſecret thing*, Eccleſ. 12. 14. For would they but conſider and ponder what Confuſion will overwhelm them when this ſhall be done in the face of the whole World, and before all

that knew them, and they not able to make any denial, or excuſe. This, I ſay, if any thing, would be a powerful Curb to withhold them from thoſe Enormities to which this ſhame is appendant. It may be thou madeſt a great Figure in the World for Piety and Religion, wouldſt ſeem to be Some-body in the Eyes of Men, when thou wert falſe and unſound, didſt harbour and nouriſh ſome Viper in thy Boſom,

*Introrſum turpis, ſpecioſa pelle decorus:*

When thy ſecret Faults ſhall be expoſed before thy Neighbours, and Friends, and Children, *And the ſhame of thy nakedneſs ſhall be made to appear*, Revel. 3. 18. How wilt thou then be confounded and aſtoniſhed, and unable to lift up thy Head? What horrour will then ſeize thee, *When thy confuſion ſhall be continually before thee, and the ſhame of thy face ſhall cover thee?* Pſalm 44. 15. It concerns thee therefore to look about thee in time, and ſearch thy Conſcience to the Bottom, to remove whatever grates, to caſt out whatever offends, though never ſo cuſtomary, never ſo pleaſing to Fleſh and Blood: to apply thy ſelf to the Merits and Satisfaction of *Chriſt Jeſus* for the Expiation of what is paſt; and for the future

future to resolve and endeavour the amendment of whatsoever hath heretofore been amiss in thee; and to beg the assistance of the Divine Grace to strengthen in thee every good purpose and resolution of heart, and to enable thee to bring it to issue and effect. And for thy security, I think it good Advice, to resolve so to behave thy self in thy Retirements, so to live in the secret of thy Chamber and Closet, as though the Doors were thrown open upon thee, and all the Eyes of the World beheld thee; as though thou were't in the *Arena* of a Publick Theatre, exposed to the view of Men and Angels. I remember the ingenious Writer of Politick Discourses, *Boccalini*, doth often divert himself and his Reader, with facetious Reflections upon the contrivance of a Window into the Breast; which, if I mistake not, he fathers upon *Lipsius*. However he may deride it, I think it would be prudent Counsel to give and take, for every Christian. So to live and carry it in the secret of his Heart, as if there were a Window into his Breast, that every one that passed by, might look in thereat, and see all the thoughts and imaginations that passed there, that found any entertainment or acceptance with him. For though indeed *God searches the hearts and reins, and understandeth our thoughts afar off,*

Pſal. 139. 2. Yet ſuch is the hypocriſie of Mankind, that they do for the moſt part more reverence the Eyes of Men, than of God: and will venture to do that in his preſence, which they would be aſhamed the Eyes of Man ſhould ſee them doing. You will ſay, Is it not better to be modeſt, than to be impudent? Is it not better to conceal, than to publiſh ones ſhame? Is it not better to reverence Man, than neither God nor Man? Doth not the Scripture condemn a Whore's Fore-head? Is it not a true Proverb, *Faſt Shame, Faſt Grace?* Was it not good Advice of a Cardinal (as I remember) *Si vou caſtè, tamen cautè?* He that hath devoured ſhame, what Bridle is there left to reſtrain him from the worſt of evils? I anſwer, That it ſeems indeed to me, that publick ſins of the ſame nature, are more heinous than ſecret; and that impudence in ſinning, is an aggravation of ſin. For open ſins dare God, and bid defiance to Heaven, and leave the Sinner unreclaimable, and are of more pernicious influence. I do not now ſpeak of the hypocriſie of feigning holineſs to ſerve our own ends, which is rightly eſteemed *duplex iniquitas*, but that of concealing and hiding vicious actions, to avoid the ſhame of Men. And yet there is a great obliquity in this too. Becauſe even this is a ſlighting and undervaluing

ing of God, a preferring of Man before him, ſetting a greater price and eſteem upon the praiſe and commendation of Men, than the praiſe and approbation of God, *John* 12. 43. God ſees the ſecreteſt Actions, yea, the moſt retired thoughts. They that believe this, and yet make bold to do in his preſence, what the fear of Man's Eye would reſtrain them from, it is clear that they reverence Man more than God, a poor frail, impotent Creature like themſelves, more than the moſt pure and ever bleſſed Creator. Nay, let the Temptation to any ſin be never ſo ſtrong, and the natural inclination never ſo vehement, if the knowledge and conſcience of Men be a motive and conſideration powerful enough to enable us to reſiſt and repel them, had we but as firm a belief of the preſence and inſpection of God, and as great a reverence and dread of him, Why ſhould not theſe have the ſame influence and effect upon us? Let us then avoid the hypocriſie of deſiring to be thought better than we are, by endeavouring to our utmoſt to be as good as we would be thought to be, and if poſſible, better. So ſhall we ſatisfie our ſelves that we ſeek the praiſe of God, more than the praiſe of Men.

Here

Here before I proceed, I cannot but admire the Wiſdom and Goodneſs of Almighty God, in implanting ſuch a Paſſion in the Nature of Man as Shame, to no other uſe or purpoſe, that I can imagine, than to reſtrain him from vicious and ſhameful Actions. A Paſſion I call it, becauſe the Body, as in other Paſſions, ſuffers from it, and that in a peculiar manner; it cauſing a ſudden motion of the Blood to the outward parts, eſpecially to the Face, which is called bluſhing; and a dejection of the Eyes. If you ask me what Shame is, I anſwer, It is an ungrateful and afflictive ſence of Soul proceeding from Diſhonour. Now Diſhonour is nothing elſe but Mens ill Opinion of me, or diſlike and condemnation of my Actions, ſome way declared and manifeſted to me; which why I ſhould have ſuch an abhorrence of, and why it ſhould be ſo grievous and tormenting to me, there ſeems not to be a ſufficient ground and foundation in the nature of the thing, ſuppoſing ſuch as have this Opinion, have neither power nor will to hurt my Body: but only in the Ordination of God, who hath ſo made our Natures, to ſecure our Innocency, and with hold us from the commiſſion of what is diſgraceful and ignominious, as all ſinful Actions, and none elſe are.

And

And as for ſecret ſins, I think ſhame may take place there too. It was a precept of the *Pythagoreans*, Πάντων δὲ μάλιϛ' αἰδέου σαυτόν, *Of all Men reverence your ſelf moſt:* be aſhamed to do that before your ſelf, which before others you would abhor or bluſh to do; otherwiſe you muſt ſuffer diſhonour from your ſelf, and condemn your own Actions, which will in all reaſon be more grievous and afflictive than the ill Opinion and Word of other Men. Hence Conſcience of ſin is eſteemed a moſt painful and tormenting thing, by the generality of all Mankind, tho no other Man be privy to it.

But to return from whence we digreſſed, * Daniel 12. 2. though * *ſhame and everlaſting contempt* ſhall at the general Reſurrection be the portion of them who perſiſt and die in their ſins, yet a ſerious and unfeigned Repentance, atteſted by a holy Converſation for the future, is an effectual means to deliver us from this ſhame, whatever our forepaſt ſins have been. For they ſhall not be produced againſt us, they ſhall not be objected to us at that day; they ſhall be buried in eternal ſilence and oblivion, and be as tho' they had not been. And this Opinion I hold, 1. More agreeable to the Scripture, which in this matter makes uſe of the Terms of hiding, and covering, and blotting out, and forgetting, *Pſalm* 32. 1.

*Bleſſed*

*Bleſſed is the man whoſe tranſgreſſion is forgiven, and whoſe ſin is covered,* Eſay 43. 25. *I, even I am he, that blotteth out thy tranſgreſſions, and will not remember thy ſins.* So Pſalm 51. 9. *Hide thy face from my ſins, and blot out all mine iniquities.* Jerem. 48. 34. *I will forgive their iniquity, and remember their ſin no more.* Ezek. 28. 22. *All his tranſgreſſions that he hath committed, they ſhall not be mentioned unto him,* Mich. 7. 19. *Thou wilt caſt all their ſins into the depths of the Sea.* And as it is more conſonant to the Scripture, ſo is it, 2. More grateful and conſolatory to the Penitents. For the mere mentioning and reciting of their ſins before ſuch an Aſſembly, muſt needs refreſh their ſhame and ſorrow, and ſo diminiſh their happineſs and joy. To which I might add, that it is written, our Saviour at the laſt Judgment, in pronouncing the Sentence, ſhall enumerate the Good Works of the Godly to their praiſe; but not a word ſaid of producing their ſins. I ſay, I hold this Opinion more probable upon theſe accounts, than theirs who affirm they ſhall then be publiſhed, for the magniſying and advancing, the declaring and illuſtrating the Mercy and Grace of God, in pardoning ſo great and heinous Offences.

And

And truly, I do not know, but that the ſins of the Bleſſed may be blotted out, even of their own Memories. Some Philoſophers who were of Opinion, that Souls præ-exiſt before their Bodies, thought they were dipt in *Lethe*, which is a Fountain cauſing Oblivion, by means whereof they forgat whatever they had done before. This I look upon as a dream, or Fancy: but truly I am inclinable ſometimes to imagine, that the Soul of Man can hardly be entirely happy, unleſs it be as it were thus dipt in *Lethe*: for every ſinful Action having a natural Turpitude in it, and being diſhonourable, how can the Memory and thought of it, but beget ſuch an ungrateful Paſſion as Shame, even to Eternity? And what do Divines mean by ſaying, that the action [of ſinning] ſuddenly paſſes away, but the ſtain and blot of it remains; but that a vicious action, even by them to whom it is pardoned, can never be thought of without grief and diſturbance, it leaves an indelible ſcar in the Soul, which can never be perfectly healed and obliterated.

2. It concerns us much to live in all holy Converſation in this World, as we deſire to avoid that Pain and Miſery, which we ſhall otherwiſe moſt certainly be adjudged to at

that

that day: that *indignation and wrath, tribulation and anguiſh*, which God ſhall render to them *that do not obey the truth, but obey unrighteouſneſs*, Rom. 2. 8. That *worm that dieth not*, and that *fire that is not quenched*, Mark 9. 44. and 46, and 48. That *outer darkneſs, where is weeping and wailing, and gnaſhing of teeth*, Matth. 8. 12. and 22. 13. and 25, 30, That *furnace of fire*, Matth. 13. 42. 50. That *lake of fire and brimſtone*, Revel. 20. 10. or of *fire burning with brimſtone*, Revel. 19. 20. Which places, tho' they be not literally to be expounded, yet do they import at leaſt a very ſad and deplorable Eſtate, a high degree of torment and anguiſh: and all this eternal, and without intermiſſion night and day. *Theſe ſhall go into everlaſting puniſhment*, Mat. 25. 46. The ſtate of the Damned is ſuppoſed to be a ſtate of abſolute and complete Miſery, made up of the loſs of the greateſt Good, and a conſtant, freſh, and lively apprehenſion of it: which Divines call *Pœna Damni*. And, 2. Exceſs of bodily pain and ſufferings, and ſad diſtreſs and Trouble of Mind, occaſioned by all manner of frightful Apprehenſions, and vexatious Perturbations and Reflections, which they call *Pœna Senſus*; and this without any intermiſſion or hope of deliverance eternally. *Jude* 7. it is called the *vengeance of eternal fire*. Revel.

vel. 14. 11. *The ſmoke of their torment* is ſaid *to aſcend up for ever and ever.* And *Revel.* 20. 10. it is ſaid of the Beaſt and falſe Prophet, that *they ſhall be tormented night and day for ever and ever.* If this be ſo, is't not our greateſt Wiſdom to uſe our utmoſt diligence and endeavour to avoid ſo deplorable a Condition, and to ſecure to our ſelves an intereſt in a future eſtate of everlaſting Bliſs and Happineſs when this Life ſhall be ended?

But here the *Epicureans*, and ſenſual Perſons will be ready to object and argue, Here are Pleaſures and Delights in this World, which are very inviting and taking, and do highly gratifie my Senſes and Appetites. I hear likewiſe of future Rewards and Puniſhments for thoſe that deny or fulfil their carnal Luſts and Deſires. Theſe ſenſual Pleaſures I ſee and taſte, and feel, and am ſure of, the other I do but only hear of, and therefore they do not, they cannot ſo ſtrongly affect me: Were Heaven and the Happineſs thereof ſet before my eyes, and did I ſee it as plainly and clearly as I do theſe things below, then indeed I ſhould not need many motives to provoke me to endeavour the obtaining of it. But alas, that is far above, out of our ſight, the Joys of Heaven are by the Apoſtle termed things not ſeen. Again, theſe outward and tem-

temporal enjoyments are preſent and eaſily obtainable; the other at a great diſtance, future, and beſides, very hard to come by; and I love my eaſe, *Ut eſt ingenium hominum à labore proclive ad libidinem.* Should I deny my ſelf Good in this Life, and then perchance ceaſe to be, and ſo have no Reward for my pains; nay, on the contrary expoſe my ſelf to the hazard of many afflictions and ſufferings, which are the portion of the Godly in this Life, how unneceſſarily ſhall I make my ſelf miſerable? Miſerable I ſay, becauſe by the Apoſtle's own confeſſion Chriſtians, *If in this life only they had hope, would be of all men the moſt miſerable,* 1 Cor. 15. 19 Had I not better make ſure of what is before me? Why have I theſe Appetites within me, and ſuch Objects about me, the one being ſo ſuitable to the other, is it not more natural and reaſonable to fulfil, than deny them? Surely it cannot be Wiſdom to loſe a certain Good, for an uncertain Hope; and for an ungrounded fear of Hell hereafter, to undergo a Purgatory here.

To this Argumentation upon the falſe Foundation of the uncertainty of a Future Eſtate of endleſs Happineſs or Miſery, accordingly as we have behaved our ſelves in this Life, I anſwer,

That

That for the futurity of ſuch an eſtate, we have the beſt Authority in the World, to wit, the holy Scriptures, and univerſal Tradition.

1. The Holy Scriptures, whoſe Authority to be more than humane, hath been by many ſo clearly and convincingly demonſtrated, that I ſhall take it for granted, and not waſte time to prove it. The Teſtimonies herein contained concerning eternal Happineſs and Miſery are ſo clear and full, that it ſeems to me impoſſible without manifeſt diſtortion to elude or evade the force of them. Some we have already recited, and might produce many more, Iſa. 33. 14. *Who among us ſhall dwell with the devouring fire? Who among us ſhall dwell with everlaſting burnings?* Dan. 12. 2. *And many of them that ſleep in the duſt of the earth ſhall awake, ſome to everlaſting life, and ſome to ſhame and everlaſting contempt.* 2 Theſſ. 1. 9 *Who ſhall be puniſhed with everlaſting deſtruction from the preſence of the Lord*, &c. ſpeaking of them who know not God, and obey not the Goſpel of our Lord Jeſus Chriſt. Iſa. 66. 24. *For their worm ſhall not die, neither ſhall their fire be quenched.*

The *Origeniſts*, and others, that cannot be reconciled to the Catholick Doctrine of the Eternity of the Puniſhments of the Damned,

make the word αἰὼν, from which the Latin *ævum* is derived, to ſignifie ſometimes a determinate time, as might (ſay they) eaſily be proved by many examples, and ſo εἰς αἰῶνα or αἰῶνας, which we tranſlate *for ever*, ſignifies when applied to this matter, a long indeed, but yet a finite time; and εἰς τοὺς αἰῶνας τῶν αἰώνων, which we render *for ever and ever*, may likewiſe ſignifie not an eternal duration, but a time to which ſome term may be ſet by God, though to us unknown. In the ſame ſenſe they accept the Adjective αἰώνιος for a long, but finite time. But I am of S. *Auguſtine*'s Opinion, that αἰώνιος doth in the New Teſtament ſignifie the ſame with *æternus* in *Latin*, and is appropriated to things that have no end: and that εἰς τοὺς αἰῶνας τῶν αἰώνων, *for ever and ever*, doth in like manner always denote eternal or endleſs duration. That the word αἰώνιος, when applied to the ſtate of the Damned, doth ſignifie *eternal*. S. *Auguſtine* well demonſtrates from the *Antitheſis* in that place of *Matth.* 25.46. *And theſe ſhall go away into everlaſting puniſhment, but the righteous into life eternal.* Where it is in the ſame ſenſe attributed to that Life which is the Reward of the Righteous, and that Fire which is the Puniſhment of the Damned; there being no reaſon to believe that the ſame word in the

ſame

ſame Verſe, when applied to oppoſites, ſhould be taken in a different ſenſe. But by the conſent of all Chriſtians it is granted, that the Life of the Bleſſed ſhall be eternal, therefore ſo muſt the Puniſhment of the Damned be too.

This acception of the word αἰώνιος for *eternal* or *endleſs*, when it refers to the ſtate of thoſe miſerable Perſons, receives a further and ſtrong confirmation from the

Second Particular we propoſed, that is, *Univerſal Tradition:* It being a received Opinion among the Heathen, which muſt needs deſcend down to them by Tradition from the Ancients, that Eternal Puniſhments awaited the Wicked after Death.

What more common Notion among the *Grecians* and *Romans*, than of an *Elyſium*, and *Tartarus?* the former to reward good Men, the latter to puniſh wicked. And thoſe too eſteemed to be Eternal States. Of this the *Epicurean* Poet *Lucretius* is a ſufficient and unexceptionable Witneſs: For he makes the fear of theſe Puniſhments to be the cauſe of all the Miſeries of Humane Life, and the Foundation of all Religion,

*Æternas quoniam pœnas in morte timendum.*

Now, that he could derive this from no other ſource but Tradition, is clear; becauſe he lived a good while before our Saviour's time, and the divulgation of the Scripture among the Heathen. And becauſe it may be objected, that *Æternas* may ſignifie only of long continuance, to put the Matter out of all doubt, in another place he ſaith,

*—— Nam ſi nullum finem eſſe putarent,*
*Ærumnarum homines, nulla ratione valerent*
*Relligionibus atque minis obſiſtere vatum.*

— But if it once appear
That after Death there's neither Hope nor Fear,
Then Men might freely triumph, then diſdain
The Poet's Tales, and ſcorn their fancy'd Pain.
But now we muſt ſubmit, ſince Pains we fear
Eternal after Death, we know not where.

And

And that this Opinion and Belief generally prevailed among the People before *Epicurus* his time, the ſame *Lucretius* teſtifies in the beginning of his firſt Book,

*Humana ante oculos fœdè cum vita jaceret*
*In terris oppreſſa gravi ſub Relligione,* &c.
*Primùm Graius homo,* &c.

Long time Men lay oppreſt with ſlaviſh fear,
Religion's Tyranny did domineer,
Which being plac'd in Heaven, look'd proudly down,
And frighted abject Spirits at her frown.
At laſt a Mighty One of *Greece* began
T'aſſert the Natural Liberty of Man,
By ſenceleſs Terrours, and vain Fancy led
To Slavery, ſtreight the conquer'd Fantoms fled.

for he makes (as we ſaw before) the Fear of Eternal Pain and Miſery, to be the Foundation of all Religion.

1. Now becauſe theſe Objectors do repreſent Religion to themſelves and others as a melancholick and diſconſolate thing: and think and ſay, that thoſe that enter into this ſtate, muſt bid adieu to all the Pleaſures of Sence, and taſt no ſweetneſs in any worldly Object. I ſhall endeavour to remove this prejudice. I ſay therefore, That our gracious God doth not envy us any real Good that the Creatures can afford us, and therefore hath not denied us a moderate uſe and fruition of any of them. And ſeeing he hath annexed Pleaſure to thoſe Actions that are neceſſary for the ſupport of life, and continuation of kind, as a bait to invite us to the performance of them, it ſeems to me highly abſurd and contradictious to affirm, that he hath forbidden us to partake or taſte thoſe Enjoyments which himſelf has appointed as effectual means for the ſecurity of thoſe great Ends; and which are ſo neceſſary Conſequents of thoſe Actions, that we cannot but partake them. Where the Appetite is eager, God hath indulged, I might ſay, commanded a moderate and regular ſatisfaction. And we know, nay, the blindneſs of Atheiſm cannot deny, that the greateſt pleaſure reſults from a moderate and well circumſtantiated uſe of Pleaſures. *Voluptates commendat rarior uſus.*

Now

Now a Religious Man enjoys all the Pleaſures of theſe worldly and ſenſible Goods, without any of the pain, which is annexed to the exceſſive and irregular uſe, or indeed abuſe of them: and beſides, his Pleaſure is enhanſed, in that he beholds and receives them as Bleſſings of God, and Tokens of his Favour and Affection; and is without all fear of a future ſad Reckoning for his participation of them. Howbeit a denial of our ſelves for God's ſake and cauſe in any thing which we might otherwiſe lawfully enjoy, though it be not commanded, yet is accepted, and ſhall be rewarded by him.

Others there are who grant, That theſe words grammatically ſignifie as we contend, and that Eternal Puniſhments are indeed threatned to the wicked; but ſay they, theſe Threatnings are intended only, as *Terriculamenta*, or Bug-bears to Children, to terrifie and keep People in awe, and to preſerve the World in ſome tolerable condition of quietneſs. And *Origen* himſelf, tho' he be of opinion, that theſe Threatnings ſignifie only temporary Pains; yet he ſaith, that ſuch Myſteries are to be ſealed up and concealed from the Vulgar, leſt wicked Men ſhould ruſh into ſin with all fury and licentiouſneſs, if this Bridle were taken off, who by the opinion and fear of eternal and endleſs Pu-

niſhments can ſcarce be deterred and reſtrained from it.

To this I anſwer, 1. That it ſeems to me indecorous and unſuitable to the Perſon and Majeſty of God, to make uſe of ſuch ſorry and weak means to bring about his ends, as grave Men can hardly condeſcend to. 2. I do not ſee how it can conſiſt with his Veracity, in plain terms, abſolutely to threaten and affirm what he never intends to do.

Indeed it is queſtionable, Whether it be allowable in Man: it being at beſt but an officious Lye: for it is a ſpeaking what we do not think, and that with an intention to deceive.

*Secondly*, I proceed now to a ſecond Objection againſt the Eternity of the Pains and Sufferings of the Damned, and that is, its inconſiſtency with the Juſtice of God. What proportion can there be between a tranſient and temporary act, and an eternal Puniſhment? The moſt rigid Juſtice can exact no more than a *Talio*, to ſuffer as I have done.

Εἶκα πάθοι τὰ κ' ἔρεξε· δίκη δ' ἰθεῖα γενοῖτο.

If

If I have hurt, or grieved, or injured any Man, to be puniſhed with the ſame, or an equivalent ſuffering: if I have taken any unreaſonable Pleaſure, to compenſate it with an anſwerable Pain. Indeed the enormities of my Life cannot well deſerve ſo much, if it be conſidered, that I have been ſtrongly inſtigated and inclined, and as it were fatally driven upon all the Evils which I have committed, by thoſe *Affections* and Appetites, which I made not for my ſelf, but found in my ſelf; and have been expoſed to ſtrong and almoſt inexpugnable Temptations from without; beſet with Snares, encompaſſed about with innumerable Evils.

To this I anſwer First, That every ſin, injury, or offence is aggravated and enhanſed by the dignity or merit of the Perſon againſt whom it is committed. So Parricide is eſteemed a greater Crime than ordinary Murther, and by the Laws of all Nations avenged with a ſorer Puniſhment. The like may be ſaid of *Læſa Majeſtas*, or Treaſon. Now God is an infinite Perſon, and Sin being an injury and affront to him, as being a violation of his Law, an infinite Puniſhment muſt be due to it.

This anſwer Dr. *Hammond* in his *Practical Catechiſm*, lib. 5. ſect. 4. accounts a Nicety, and

and unſatisfactory, as alſo that other common anſwer, That if we ſhould live infinitely, we would ſin infinitely; and therefore gives us another, which in his Diſcourſe of the Reaſonableneſs of Chriſtian Religion, he thus briefly ſumms up.

2. *That the choice being referred to us to take of the two which we beſt like, eternal Death ſet before us on the one hand, to make eternal Life the more infinitely reaſonable for us to chuſe on the other hand, and the eternal Hell (whenſoever we fall into it) being perfectly our own Act, neither forced on us by any abſolute Decree of God, nor irreſiſtible temptation of the Devil, or our own Fleſh; but as truly our wiſh and choice, and mad purchaſe; nay, much more truly and properly, than* eternal Heaven *is (when our Obedience is firſt wrought by God's Grace, and yet after that ſo abundantly rewarded by the* Doner) *it is certain, if there be any thing irrational, it is in us unkind and perverſe Creatures (ſo obſtinate to chuſe what God ſo paſſionately warns us to take heed of; ſo wilfully to die, when God ſwears he wills not our death) and not in him, who hath done all that is imaginable to be done to reaſonable Creatures (here in their way or courſe) to the reſcuing or ſaving of us.*

But

But to this may be replied, If the thing itſelf be unjuſt, how can our chuſing of it make it juſt? How can it be juſt to annex ſuch a Penalty as eternal Hell to a ſhort and tranſient offence? Suppoſe a Prince ſhould make a Law, that whoſoever did not riſe up and bow himſelf before an Old Man, ſhould be put to Death with Torments; and one of his Subjects knowingly ſhould tranſgreſs this Law upon ſome great temptation; would it not be accounted Cruelty in the Prince to execute this Law upon him? Laws may be unjuſt upon account of diſproportionate Penalties. Neither doth our Choice much help the Matter, for that is but an effect of our Error or Folly, or, if you will, Madneſs, which doth as little deſerve eternal Death as the Sin committed doth.

If any Man be diſſatisfied with the precedent Anſwers, all that I have to add further, is, that before this Sentence adjudging to eternal Death be pronounced againſt him, and executed upon him, there ſhall be ſuch a revelation made, as ſhall convince and ſatisfie him of the Righteouſneſs thereof. And this the Apoſtle ſeems to intimate, *Rom.* 2. 5. when he calls the Great Day of Doom, the Day of the Revelation of the righteous Judgment of God. Then ſhall be made appear what

what now to our dim-ſighted Reaſon is not penetrable; how the Juſtice of God can conſiſt with the Eternal Damnation of the wicked.

As for Man's being as it were fatally determined to Evil by the ſtrength of Temptation, and the violence of unruly and head-ſtrong Paſſions and Appetites: I anſwer, That there are motives and conſiderations ſufficient to enable a Man to reſiſt and repel, to conquer and overcome the moſt alluring and faſcinating Temptations, the moſt urging and importunate Appetites or Affections; ſuch are certain Shame and Diſgrace, and that not long to come, eternal Infamy and Diſhonour; preſent Death, ſtrong fear and dread of approaching Death, or ſad and intolerable Pains or Calamities. Now the Divine Threatnings are of the greateſt and moſt formidable Evils and Miſeries that Humane Nature is capable of ſuffering; and therefore were they but firmly believed and apprehended, they would be of force ſufficient to ſtir up in us ſuch ſtrong Paſſions of Fear and Terror, as would eaſily chaſe away all Temptations, and embitter all the Baits of Senſual Pleaſure.

3. There remains yet a third Objection againſt an eternal Hell, and that is, that it is inconſiſtent with the Divine Goodneſs. For the

the Unbeliever will ſay, It's contrary to all the Notions and *Ideas* I have of God, to conceive him to be ſo angry and furious a Being. How can it ſtand with Infinite Goodneſs to make a Creature that he fore-knew would be eternally miſerable? We Men account it a piece of goodneſs to pardon offences: And all Puniſhments are intended either for the reformation and amendment of the Offender, or if it be unreclaimable to prevent the Miſchief which he might otherwiſe do, or for an Example to others to deter them from the like Enormities: but I do not ſee for what ſuch end any Man can be eternally tormented. So that of ſuch inflictions one may rationally demand, *Cui bono?* What Good comes of them? How then can they come from God, who by all Mens confeſſion is infinitely Good?

To which I anſwer: Firſt, That God is juſt as well as good. You will ſay, what is Juſtice? It is an equal weighing of Actions, and rendring to every one his Right or Due. A ſetting ſtreight again what was perverted by the ſins and extravagancies of Men. Now that the breaking of order and equality in the World, this uſurping and encroaching upon others Rights is a great Evil, and ought to be rectified, ſome may take an Argument from

from the ſtrong inclination and deſire to revenge Injuries, that is implanted in the Nature of Man, and of all Creatures. You'll ſay, all deſire of Revenge is abſolutely ſinful and unlawful. I anſwer, I am no Patron of Revenge. I know the very Heathen by the Light of Nature condemned it.

*—Infirmi eſt animi exiguique voluptas*
*Ultio——*

*Revenge is the pleaſure of a poor and weak Spirit.* Yet let us hear what they have to ſay. 1. It is hard to affirm, that any innate Appetite or Deſire is in itſelf ſimply and abſolutely, and in all Circumſtances whatſoever unlawful, for this ſeems to reflect upon the Author of Nature.

To which may be anſwered, that a well circumſtantiated Deſire of Revenge may not be in itſelf unlawful, yet for the evil Conſequents of it, it may be, and is prohibited by a poſitive Law. 2. Divine Perſons have prayed to God to avenge them, as *David* and the Prophets. And S. *Paul* himſelf, 2 *Tim.* 4. 14. prays God, to *reward Alexander the Copperſmith according to his works.* To which may be anſwered, that thoſe Expreſſions are rather Predictions of what ſhould befal their Enemies

Enemies, than deſires that they might. Again, whereas it is ſaid, *Revel.* 6. 9, 10. *That the ſouls of them under the altar that were ſlain for the word of God, and the teſtimony which they held, cried with a loud voice, ſaying, How long, O Lord, holy and true, doſt thou not judge and avenge our Blood on them that dwell on the earth:* Doctor *Hammond* ſaith, It ſignifies no more, than that their Blood cries to God for Vengeance, as *Abel's* is ſaid to do. 3. The Nature of Forgiveneſs ſeems to imply the Lawfulneſs of ſome deſire of Revenge. For what is Forgiveneſs but a parting with, and a renouncing the Right I have to be avenged, and therefore before I forgive I do retain at leaſt ſome will to be revenged. And I am not obliged by our Saviour to forgive abſolutely, but upon condition of Repentance. *Luke* 17. 3, 4. *If thy brother ſin againſt thee rebuke him, and if he repent forgive him*, &c. And in the Lord's Prayer one Petition is, *Forgive us our treſpaſſes, as we forgive them that treſpaſs againſt us.* But God forgives not without Repentance. To which may be anſwered, That before Repentance, I may retain a will of puniſhing an Offender for his own Good and Reformation, but with no reſpect of avenging what is paſt. And if his Repentance

tance prevents his Puniſhment, then I am to forgive him, that is, ceaſe to deſire his Puniſhment. But all allow Vengeance to be juſt in God, whoſe Actions are not to be ſcanned by our Meaſures.

2. If it be juſt with God to propoſe to us ſuch a choice as Heaven upon condition of our Obedience to his Law, or Hell in caſe of Diſobedience; as we ſee ſome wiſe Men make no ſcruple to grant; then it cannot be injuſtice in him to inflict the Puniſhments of Hell upon them that make it their choice. Nay, I cannot ſee how it can conſiſt with his Veracity not to do it; why then ſhould any Argument from his Goodneſs move us to diſtruſt his Veracity? To which I ſhall add, That the very being of Sin and Miſery in the World is as great an Argument againſt the Goodneſs of God, as the eternal Puniſhment of it: Sith we muſt needs grant, that God Almighty, Bleſſed for ever, could, if he had pleaſed, have prevented it. If any Man ſhall ſay, This was not poſſible without changing the very Nature of Man, and taking away the Liberty of his Will. To him I reply, How then can he confirm the Bleſſed, reſerving their Liberty? Or muſt we ſay with *Origen*, That they are in a mutable ſtate too, and that Heaven will have

have an end as well as Hell? If any Man remain ſtill unſatisfied with what hath been ſaid, I muſt refer him for full ſatisfaction to the Revelation of the righteous Judgment of God at that Great Day, of which mention hath been already made.

I am as unwilling as any Man to limit the Mercies of God: but yet I muſt refer it to him, whether he will be more favourable than he hath threatned or no, whether he will remit ſomething of the Severity of his Comminations. I am alſo willing to reſtrain and confine the ſenſe of theſe words αἰῶνες, and αἰῶνες αἰώνων, as far as the Context will permit. But let our Opinions and Hopes of the Mercies of God, and a temporary Hell be what they will: a temporary Hell, I ſay, or rather a *Purgatory* inſtead of Hell: For the word Hell, according to the uſual acception of it, includes Eternity. I ſhall propoſe two things to be conſidered.

1. That *Origen* the firſt Broacher of this Opinion of the Determination of the Puniſhments of the Damned, doth acknowledge that the contrary Doctrine is very uſeful to reſtrain the common People from Sin: and that this is to be held as a great Secret, and ſtudiouſly concealed from them. Now if it be of ſuch eminent uſe to them, why

may it not alſo be to the Learned and Noble; who, I fear me, may want ſuch a Bridle as well as they?

2. Since God hath threatned eternal Puniſhments, whether he intends to execute them upon us or no, it is clear, I think, he would have them be believed by us, elſe they cannot have that end and effect he deſigned them to; and therefore it muſt be unbelief and preſumption in us to deny or diſtruſt them, tho' upon ſuppoſition, that they are irreconcilable with his Goodneſs; with which yet perhaps they may accord well enough, tho' we cannot at preſent diſcern it. All Divine Revelations are to be believed and accepted by us, as well Threatnings as Promiſes; and if we may diſtruſt the Veracity of God in them, I know not but we may as well do it in theſe: if we deny the Eternity of the Torments of Hell, I do not ſee but that we may upon as good grounds, with *Origen*, deny the Eternity of the Joys of Heaven.

Let not then the preſumption of a temporary Hell encourage thee to go on in ſin: for, I fear, ſuch a Perſuaſion may have an ill influence on the Manners of Men. Eternity is the very ſting of Hell: take that out, and the Sinner will think it tractable enough.

The

The very thought of an eternal Hell intervening (and it will often intrude itſelf) ſtrikes a cold damp to his very Heart in the midſt of his Jollities, and will much qualifie and allay all his Pleaſures and Enjoyments. Rid him of this fear, and he will be apt to deſpiſe Hell and all its Torments, be they never ſo grievous or laſting. Take off this Bridle, and, as we hinted before, he will ruſh into Sin, *as a Horſe ruſheth into the battel.* He will be ready thereupon thus to argue with himſelf, What need I take ſo much pains to ſtrive againſt Sin? What need I ſwim againſt the Stream, and reſiſt the Tide and Eddy of my Paſſions, my natural Appetites and Inclinations, and the Solicitations of Company? What need I maintain ſuch a conſtant Watch and Ward againſt my Spiritual Enemies, the Devil, the World, and the Fleſh? If I fall into Hell at laſt, that is no eternal State, it laſteth but for a time, and will come to an end. I'll venture it: I hope I ſhall make a ſhift to rub through well enough. Let me ask thee, But how if thou ſhouldeſt find thy ſelf miſtaken? If the Event fruſtrate thy Hopes, and fall out contrary to thy Expectation? What a ſad caſe wilt thou be in then? How will the unexpectedneſs thereof double thy Miſery?

*Improviſa graviùs feriunt.* How wilt thou be ſtrucken as it were with a Thunderbolt, when the Almighty Judge ſhall fulminate againſt thee a dreadful indeed, but by thee formerly undreaded Sentence, adjudging thee to endleſs Puniſhments? How wilt thou damn thine own Credulity, who by a groundleſs Belief of a temporary Hell, haſt precipitated thy ſelf into an eternal, which otherwiſe thou mighteſt poſſibly have avoided?

Well, but ſuppoſe there be ſome ſhadow of hope of the determination of the Puniſhments of the Damned: It is by all acknowledged to be a great piece of folly to leave Matters of the higheſt moment, and which moſt nearly concern us, at uncertainties: and a point of Wiſdom, to ſecure the Main Chance, and to be provided againſt the worſt that can come. An eternal Heaven or State of compleat Happineſs is the Main Chance, and is not to come into any competition, or ſo much as to be put into the ballance againſt a few ſhort, tranſient, ſordid, loathed, and for the moſt part upon their own account repented Pleaſures: To ſecure to our ſelves an Intereſt in ſuch a State is our greateſt Wiſdom. And as for being provided againſt the worſt that may or can come.

What

What can be worſe than an eternal Hell? which, there is I do not ſay a poſſibility, but the greateſt probability imaginable, that it will be our portion; if we perſiſt in impenitency, and dye in our ſins. But ſuppoſe the beſt ſhould happen that we can hope or conceive, that Hell ſhould laſt only εἰς αἰῶνας αἰώνων, for Ages of Ages, and at laſt determine: do we think this a ſmall matter? If we do, it is for want of conſideration and experience of acute Pains. Should any of us be under the ſenſe and ſuffering of a raging Paroxyſm of the Stone, or Gout, or Colick, I doubt not but rather than endure it for ten thouſand Years, he would willingly part with all his expectation of a bleſſed Eſtate after that Term were expired, yea, and his Being to boot. But what are any of theſe Pains to the Torments and Perpeſſions of Hell? or the duration of ten thouſand Years to thoſe Ages of Ages? If thou makeſt light of all this, and nothing can reſtrain thee from Sin, but the Eternity of Puniſhment, thou art bound to thank God, who hath uſed this only effectual means, threatning an eternal Hell. And it ill becomes thee to complain of his rigour and ſeverity, who wouldeſt have made ſo pernicious an uſe of his lenity and goodneſs. But thou who haſt

enter-

entertained ſuch an Opinion, and abuſeſt it to encourage thy ſelf to go on in thy ſins, though others ſhould eſcape with a temporary Puniſhment, ſurely thou haſt no reaſon to expect any milder Doom, than to be ſentenced to an eternal.

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*F I N I S.*

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# *A* CATALOGUE *of* BOOKS *Sold by* Samuel Smith, *at the Princes Arms in St.* Paul's *Church-yard.* 1693.

MArci Tullii Ciceronis Opera quæ extant omnia, ex Manuſcriptis codicibus emendata Studio atque induſtriâ Jani Gulielmii, & Jani Gruteri. Additis earum Notis integris: Nunc denuo Recognita ab Jacobo Gronovio cujus ubique adjectæ ſunt emendationes, petitæ partim ex Libris MSS. partim ex animadverſionibus virorum Doctorum; Etiam Orationibus illuſtratis acceſſione Aſcenii Pediani, & Doctiſſimi veteris Scholiaſtæ nunquam antea editi: appoſitis in margine ad utentis commodum numeris, non tantum Gruterianis, ſed etiam Apparatui Latinæ Locutionis Nicoliano reſpondentibus; cum Indicibus aliis Correctis, aliis Novis & Accuratiſſimis. In 4 Tom. in Quarto. Idem cum eiſdem Notis & additionibus, nitidiſſimæ Characteris in 11 Tomis in Duodecimo. Lugd. Bat. 1692.

Diogenis Laertii de Vitis, Dogmatibus & Apothegmatibus clarorum Philoſophorum, Libri X. Gr. & Lat. Cum ſubjunctis integris Annotationibus F. Caſauboni Th. Aldrobandini & Mer. Caſauboni, Latinam Ambrolii Verſionem complevit, & emendavit Marcus Meibornius, excuſas Æg. Menagii in Diogenem Obſervationes Auctiores habet Volumen II. ut & ejuſdem Syntagma de Muliebribus Philoſophis, & Joachimi Kuhnii ad Diogenem Notas. Cum Junibus. 2 Vol. 4°. 1692.

Philippi Limborch Hiſtoria Inquiſitionis, cui ſubjungitur Liber Sententiarum Inquiſitionis Tholoſanæ ab An. Chriſti. CIↃCCVII. ad An. CIↃCCXXIII. in Folio, 1692.

Muſarum Anglicanarum analecta: Sive Poemata quædam meliora Notæ, ſeu hactenus inedita, ſeu ſparim cuſa, in unum Volumen congeſta. Oxon. 1692. 8°

Boyle Experimenta, Obſervationes, &c. circa Mechanicarum variarum particularium Qualitatum Originem ſive productionem, Lond. 8° 1692.

A new Hiſtory of *Æthiopia*: Being a full and accurate Deſcription of the Kingdom of *Abeſſina*, vulgarly (tho erroneouſly) called, *The Empire of Preſter John*. Illuſtrated with Copper-plates, the Second Edition. To which is added a Preface, ſhewing the Uſefulneſs of this Hiſtory, and a Map of the Country. By *Job Ludolfus*, in Folio, 1684.

The

*The Spiritual Year*: Or, Devout Contemplations, digested into distinct Arguments for every Month in the Year, and for every Week in that Month: Containing most of the Principal and Fundamental Doctrines of Christianity; being very plain and useful for the Instruction of Families in all Christian Duties, and for the disposing of them to a Religious and Spiritual Conversation. *London*, in 8, 1692.

The Meditations of *Marcus Aurelius Antoninus*, the *Roman* Emperour, concerning himself: Treating of a Natural Mans Happiness, wherein it consisteth, and of the means to attain unto it. Translated out of the Original *Greek*, with Notes. By *Meric Casaubon*, D. D. The Fifth Edition. To which is added, The Life of *Antoninus*, with some select Remarks upon the whole, by Monsieur and Madam *Dacier*. Never before in *English*, in 8°, 1692.

The Wisdom of God, manifested in the Works of the Creation. In two Parts, *viz.* The Heavenly Bodies, Elements, Meteors, Fossils, Vegetables, Animals, (Beasts, Birds, Fishes, and Insects) more particularly in the Body of the Earth, its Figure, Motion, and Consistency, and in the admirable Structure of the Bodies of Man, and other Animals, as also in their Generation, *&c.* By *John Ray*, Fellow of the Royal Society. The Second Edition, very much enlarged. In 8°, 1692.

A Treatise of Church-Government, or a Vindication of Diocesan Episcopacy, against the Objections of the Dissenters, in Answer to some Letters lately Printed, concerning the same Subject. By *R. Bancroft*, M. A. in 8°, *Lond.* 1692.

Medicinal Experiments: or a Collection of Choice and Safe Remedies, for the most part Simple, and easily prepared; useful in Families, and being cheap, may be made very serviceable to poor Country People. By the Honourable *Robert Boyle*, Esq; Fellow of the Royal Society. To which is added, A Catalogue of all his Theological and Philosophical Books and Tracts. The Second Edition, in 12°, 1693. Price 1 *s.*

An Essay of the great Effects of even, languid, and unheeded local Motion. Whereunto is annexed, An Experimental Discourse of some little observed Causes of the Insalubrity, and Salubrity of the Air, and its Effects. By the Honourable *Robert Boyle*, Esq; *Lond.* 8°, 1690.

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